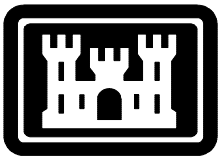


US Army Corps
of Engineers
Baltimore District

CONSTRUCTION SPECIFICATIONS

WYOMING VALLEY LEVEE RAISING PROJECT, KINGSTON-EDWARDSVILLE RELIEF CULVERTS,

LUZERNE COUNTY, PENNSYLVANIA

INVITATION NO. **W912DR-04-B-0007**

CONTRACT NO.

DATE **JAN 06, 2004**

PROJECT TABLE OF CONTENTS

-- End of Project Table of Contents --

SECTION 01000

ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.1 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Title Evidence

Proof of purchase for equipment and/or materials.

Invoice Copies

Proof of rental equipment costs.

Payment Evidence

Proof of full payment.

Photographs

Photographs and, as applicable, negatives showing construction progress.

SD-03 Product Data

Cost or Pricing Data

Proof of actual equipment costs.

Equipment Data

An itemized list of serial/model numbers and equipment installed by the Contractor under this contract..

SD-05 Design Data

Progress Schedule; G AR.

A schedule that shows the manner in which the Contractor intends to prosecute the work.

SD-10 Operation and Maintenance Data

O and M Data

A list of proposed maintenance and instruction manuals that is mainly used

for but not limited to customized equipment.

1.2 PROGRESS SCHEDULING AND REPORTING (AUG. 1999)

The Contractor, shall within five days or as otherwise determined by the Contracting Officer, after date of commencement of work, submit for approval a practicable progress schedule showing the manner in which he intends to prosecute the work. Contractor prepared form shall contain the same information as shown on the attached NADB Form 1153 ("Physical Construction Progress Chart" (CENAB-CO-E)

1.3 PAYMENTS TO CONTRACTORS: (NOV 1976)

For payment purposes only, an allowance will be made by the Contracting Officer of 100 percent of the invoiced cost of materials or equipment delivered to the site but not incorporated into the construction, pursuant to the Contract Clause entitled "PAYMENTS UNDER FIXED-PRICE CONSTRUCTION CONTRACTS". The Contracting Officer may also, at his discretion, take into consideration the cost of materials or equipment stored at locations other than the jobsite, when making progress payments under the contract. In order to be eligible for payment, the Contractor must provide satisfactory evidence that he has acquired title to such material or equipment, and that it will be utilized on the work covered by this contract. Further, all items must be properly stored and protected. Earnings will be computed using 100% of invoiced value. (CENAB-CO-E)

1.4 PURCHASE ORDER: (SEP 1975)

One readable copy of all purchase orders for material and equipment, showing firm names and addresses, and all shipping bills, or memoranda of shipment received regarding such material and equipment, shall be furnished the appointed Contracting Officer's Representative as soon as issued. Such orders, shipping bills or memoranda shall be so worded or marked that all material and each item, piece or member of equipment can be definitely identified on the drawings. Where a priority rating is assigned to a contract, this rating, the required delivery date, and the scheduled shipping date shall also be shown on the purchase order. At the option of the Contractor, the copy of the purchase order may or may not indicate the purchase price. (CENAB-CO-E)

1.5 EQUIPMENT OWNERSHIP AND OPERATING EXPENSE SCHEDULE (EFARS 52.0231.5000 (OCT 1995))

(a) This clause does not apply to terminations. See 52.249-5000, Basis for settlement of proposals and FAR Part 49.

(b) Allowable cost for construction and marine plant and equipment in sound workable conditions owned or controlled and furnished by a contractor or subcontractor at any tier shall be based on actual costs data for each piece of equipment or groups of similar serial and services for which the government can determine both ownership and operating costs from the contractor’s accounting records. When both ownership and operating costs can not be determined for any piece of equipment or groups of similar serial or series equipment from the contractor’s accounting records, costs for that equipment shall be based upon the applicable provisions of EP1110-1-8 Construction Equipment Ownership and Operating Expenses Schedule, Region East. Working conditions shall be considered to be average for determining equipment rates using the schedule unless specified

otherwise by the contracting officer. For equipment not included in the schedule, rates for comparable pieces of equipment may be used or a rate may be developed using the formula provided in the schedule. For forward pricing, the schedule in effect at the time of negotiations shall apply. For retroactive pricing, the schedule in effect at the time the work was performed shall apply.

(c) Equipment rental costs are allowable, subject to the provisions of FAR 31.105(d) (ii) and Far 31.205-36. Rates for equipment rented from an organization under common control, lease-purchase arrangements, and sale-leaseback arrangements, will be determined using the schedule, except that actual rates will be used for equipment leased from an organization under common control that has an established proactive of leasing the same or similar equipment to unaffiliated leasees.

(d) When actual equipment costs are proposed and the total amount of the pricing action exceeds the small purchase threshold, the contracting officer shall request the contractor to submit either certified cost or pricing data, or partial/limited data, as appropriate. The data shall be submitted on Standard Form 1411, Contract Pricing Proposal Cover Sheet. CENAB-CT/SEP 95 (EFARS 52.231-5000)

1.6 REAL PROPERTY EQUIPMENT DATA: (APR 1975)

At or before the time of completion of the contract, the Contractor shall submit to the Contracting Officer a complete itemized list, including serial and model number where applicable, showing the unit retail value of each Contractor furnished item of mechanical, electrical and plumbing equipment installed by the Contractor under this contract. For each of the items which is specified herein to be guaranteed for a specified period from the date of acceptance thereof, either for beneficial use or final acceptance, whichever is earlier, against defective materials, design, and workmanship, the following information shall be given: the name, address and telephone number of the Subcontractor, Equipment Supplier, or Manufacturer originating the guaranteed item. The list shall be accompanied by a copy of the specific guarantee document for each item which is specified herein to be guaranteed if one had been furnished to the Contractor by the Equipment Supplier or Manufacturer. The Contractor's guarantee to the Government of these items will not be limited by the terms of any manufacturer's guarantee to the Contractor. Baltimore District NADB Form 1019 may be utilized for the itemized listing and will be made available to the Contractor upon request. (CENAB-CO-E)

1.7 O and M DATA: (JUL 1979)

The requirements for furnishing operating and maintenance data and field instruction are specified elsewhere in the specifications. The Contractor shall submit to the Contracting Officer, at a time prior to the 50% project completion time, a list of proposed maintenance and instruction manuals to be furnished the Government and the scheduled dates of all required field instructions to be provided by Contractor furnished personnel or manufacturer's representatives. All maintenance and instruction manuals must be furnished to the Contracting Officer at least 2 weeks prior to the scheduled dates of any required Contractor furnished field instructions or at least one month prior to project completion if no Contractor furnished field instructions are required. (CENAB)

1.8 PERFORMANCE AND PAYMENT BOND REIMBURSEMENT: (MAY 1983)

The Government will reimburse the Contractor for the entire amount of premiums paid for Performance and Payment Bonds (including coinsurance and reinsurance agreements when applicable) at the contract lump sum amount under the Unit Price Schedule Item No. 01000-1, entitled "Reimbursement of Performance and Payment Bonds." Such payment will be made only after the Contractor furnishes to the Government evidence of full payment to the surety. In no case will any payment be made by the Government for reimbursement of Performance and Payment Bonds exceeding that amount bid by the Contractor under the aforementioned Unit Price Schedule Item. (CENAB)

1.9 MEASUREMENT AND PAYMENT

Except as noted in paragraph, PERFORMANCE AND PAYMENT BOND REIMBURSEMENT above, no separate measurement and payment will be made for the work performed in this Section 01000, ADMINISTRATIVE REQUIREMENTS specified herein and all costs in connection therewith shall be considered a subsidiary obligation of the Contractor, and shall be included in the overall cost of the work.

1.10 NEGOTIATED MODIFICATIONS: (OCT 84)

Whenever profit is negotiated as an element of price for any modification to this contract with either prime or subcontractor, a reasonable profit shall be negotiated or determined by using the OCE Weighted Guidelines method outlined in EFARS 15.902. (Sugg. NAB 84-232)

1.11 PHOTOGRAPHS

PHOTOGRAPHIC COVERAGE: (SEP 85) The Contractor shall provide photographic coverage under the contract. These services shall be for ten commercial grade color photographs every three months from the beginning of the contract until acceptance of the completed work. These photographs shall be in 8" x 10" size and shall be taken at intervals and at the place designated by the Contracting Officer. Negatives from all of the above photographs shall be given to and become the property of the Government. (CENAB-CO)

1.12 PARTNERING: (NOV 92)

In order to most effectively accomplish this contract, the Government is willing to form a cohesive partnership with the Contractor and its subcontractors. This partnership would strive to draw on the strengths of each organization in an effort to achieve a quality project done right the first time, within budget and on schedule. This partnership would be bilateral in make-up and participation will be totally voluntary. Any cost associated with effectuating this partnership will be agreed to by both parties and will be shared equally with no change in contract price. (CENAB-EN-DT)

1.13 PERMITS

The permits listed below have been obtained by the Government or are in the approval process and may require additional action by the Contractor to become complete. After final approvals by the respective state agencies are received, the Government will furnish approval letters and permits to the Contracting Officer who will furnish the Contractor all such permits before or during construction. The Contractor shall abide by all permit requirements.

1.13.1 Erosion and Sedimentation (E&S) Control Plan

Letter of Plan Review Adequacy, to be provided.

1.13.2 Commonwealth of Pennsylvania

401 Certification, dated March 20, 1995.

1.13.3 Copies of Permits

Copies of the approved permit and permit extension are attached at the end of this section. Copies of the permit drawings are included at the end of the contract drawings

PART 2 PRODUCTS

NOT APPLICABLE

PART 3 EXECUTION

NOT APPLICABLE

ATTACHMENTS:

NADB Form 1153 ("Physical Construction Progress Chart"Commonwealth of Pennsylvania 401 Certification, dated March 20, 1995.

-- End of Section --

PHYSICAL CONSTRUCTION PROGRESS CHART

CONTRACTOR	PROJECT	CONTRACT DESCRIPTION	SUBMITTED FOR APPROVAL	DATE	DATE NOTICE TO PROCEED RECEIVED
CONTRACT NUMBER	LOCATION		APPROVAL RECOMMENDED	DATE	STARTING DATE
			APPROVED	DATE	COMPLETION DATE

MILESTONE DATES

PRINCIPAL CONSTRUCTION FEATURE	EST. COST	DURATION CAL. DAYS

NADB Form 1153
27 Mar. 73

3930-PM-WM0229 Rev. 10/2002

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATERSHED MANAGEMENT

OFFICIAL USE ONLY

PA _____

NOTICE OF TERMINATION
OF A GENERAL OR INDIVIDUAL NPDES PERMIT FOR STORMWATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITIES
- OR -
FOR AN EROSION AND SEDIMENT CONTROL PERMIT

1. PERMIT INFORMATION:

Check the appropriate boxes.

☐ NPDES Stormwater Permit # _____ ☐ Erosion and Sediment Control Permit #_____

Check one:

☐ I/we am/are no longer the Owner(s) or Operator(s) of the Construction Activity.
☐ Earth disturbance activity has ceased and the site is stabilized.

2. EARTH DISTURBANCE SITE LOCATION:

Facility/Development Name: _____

Municipality: _____ County: _____

Latitude: _____°/ _____'/ _____" Longitude: _____°/ _____'/ _____"

U.S.G.S. Quad Map Name: _____

3. PERMITTEE/CO-PERMITTEE SUBMITTING THIS NOTICE OF TERMINATION:

PERMITTEE

Name: _____
Address: _____
City: _____
State: _____ Zip Code: _____
Telephone Number: _____

CO-PERMITTEE

Name: _____
Address: _____
City: _____
State: _____ Zip Code: _____
Telephone Number: _____

4. PERMITTEE INFORMATION AND ACKNOWLEDGEMENT (IF APPLICABLE): (This Section must be completed by the permittee to acknowledge that a co-permittee is submitting this Notice. Leave this section blank if a Co-Permittee is not listed in Section 3.)

Name: _____
Address: _____
City: _____
State: _____ Zip Code: _____
Telephone Number: _____

I hereby acknowledge that the co-permittee submitting this Notice (identified in Section 3 above) is withdrawing as a permittee.

Name and Official Title of Permittee

_____

_____

Signature:_____

Date Signed: _____, 20_____

5. **CERTIFICATION (To be completed by person(s) listed in Section 3):**

I certify under penalty of law that (1) all discharges associated with earth disturbance activities at the site that are authorized by the NPDES permit or Erosion and Sediment Control Permit identified in Section 1 above have been eliminated, the site has been stabilized and Post Construction Stormwater Management BMPs have been installed or (2) I am no longer an owner or operator of the construction activity. I understand that by submitting this Notice of Termination, I am no longer authorized to conduct earth disturbance activities under the above referenced NPDES permit, or under the Erosion and Sediment Control Permit and that discharging stormwater from construction activities to waters of the Commonwealth is unlawful where the discharge is not authorized by an NPDES permit. I also understand that the submittal of the Notice of Termination does not release a permittee from liability for any violations of this permit or of the federal Clean Water Act, the Pennsylvania Clean Streams Law and the regulations promulgated pursuant thereto or from liability for any environmental damages occurring as a result of any earth disturbance activities conducted at the site. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name and Official Title of person listed under Section 3:

_____

_____

Signature: _____

Notarization:

Commonwealth of Pennsylvania

County of _____

Sworn to and Subscribed to Before Me This

_____ Day of _____, 20_____

NOTARY SEAL

_____

Notary Public

My Commission Expires: _____

Who may file a Notice of Termination (NOT) form:

Permittees or Co-permittees who are presently covered under an Individual NPDES Permit, the Pennsylvania General NPDES Permit for discharges of stormwater associated with construction activities or an Erosion and Sediment Control Permit may submit an NOT form when: (1) they are no longer the owner or operator of the construction activity at a site which has not been stabilized, or (2) any earth disturbance activity or discharges associated with construction activity at the site have been terminated and the site has been stabilized. For construction activities, elimination of all stormwater discharges occurs when disturbed soils at the construction site have been stabilized and temporary erosion control BMP's have been removed.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATERSHED MANAGEMENT

OFFICIAL USE ONLY

PA _____

TRANSFEREE/CO-PERMITTEE APPLICATION FOR A GENERAL OR INDIVIDUAL NPDES PERMIT FOR STORMWATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITIES

TYPE OR PRINT IN BLOCK LETTERS

A. PERMIT INFORMATION

☐ Check here if applying for permit transfer. ☐ Check here if applying to be added as a co-permittee.

GENERAL OR INDIVIDUAL NPDES PERMIT FOR DISCHARGES OF STORMWATER ASSOCIATED WITH CONSTRUCTION ACTIVITIES FOR WHICH APPLYING AS TRANSFEREE/CO-PERMITTEE.

PERMIT NO.: _____ DATE ISSUED: _____

B. CURRENT PERMITTEE INFORMATION

DEP Client ID# (if known) Applicant Type / Code (if known)

Organization Name or Registered Fictitious Name Employer ID# (EIN) Contact Person

Individual Last Name First Name MI Suffix SSN

Additional Individual Last Name First Name MI Suffix SSN

Mailing Address Street

City State ZIP+4 County Phone

C. SITE INFORMATION

DEP Site ID# (if known) Site Name

DEVELOPMENT NAME (IF APPLICABLE):

SITE ADDRESS/LOCATION:

COUNTY: _____ MUNICIPALITY: _____

DATE OF TRANSFER OF PERMIT RESPONSIBILITY, COVERAGE AND LIABILITY: _____, 20_____

TRANSFER AGREEMENT: Attach a written agreement signed by all parties involved in the change of ownership and/or operational control which provides a specific date (not less than 30 days after the date this application is submitted) for the transfer of permit responsibility, coverage, and liability between the current and new owners/permittees.

D. TRANSFEREE/CO-PERMITTEE INFORMATION

DEP Client ID# (if known) | Applicant Type / Code (if known)

Organization Name or Registered Fictitious Name | Employer ID# (EIN) | Contact Person

Individual Last Name | First Name | MI | Suffix | SSN

Additional Individual Last Name | First Name | MI | Suffix | SSN

Mailing Address Street

City | State | ZIP+4 | County | Phone

E. COMPLIANCE REVIEW

Yes ☐ No ☐ Does the applicant (owner and/or operator) have or require other environmental permits issued by the Department for this project? If yes, list each permit and the compliance history of the permitted facility or operation.

Permit Program: _____

Permit Number: _____

Brief Description: _____

Compliance History: _____

If the applicant is not in compliance with any environmental law or regulation, or Department permit, order or schedule of compliance, or has failed and continues to fail to comply, or has shown a lack of ability or intent to comply with environmental laws or regulations or any Department permit, order, or schedule of compliance, as indicated by past or continuing violations, provide a narrative description of how the applicant will achieve compliance including the appropriate milestones.

F. CERTIFICATION AND SIGNATURE OF APPLICANT

Applicant Certification

I certify under penalty of law that this application and all related attachments were prepared by me or under my direction or supervision by qualified personnel to properly gather and evaluate the information submitted. Based on my own knowledge and on inquiry of the person or persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. The responsible official's signature also verifies that the activity is eligible to participate in the General or Individual NPDES Permit, and BMP's and other controls are or will be implemented to ensure that water quality standards and effluent limits are attained. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment or both for knowing violations.

_____
Print Name and Title of Person Signing

( ) _____
Telephone Number of Person Signing

NOTARY SEAL

_____
Signature of Applicant

_____
Date of Application Signed

Notarization:

Sworn to and Subscribed to Before Me This

_____ Day of _____, 20____

_____
Notary Public

Commonwealth of Pennsylvania

County of _____

My Commission Expires: _____

CO-PERMITTEE AGREEMENT
ASSUMPTION OF RESPONSIBILITY UNDER A GENERAL OR INDIVIDUAL NPDES PERMIT FOR STORMWATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITIES

_____ (Permit Number)

_____ (Name of Facility/Project)

_____ (Municipality)

_____ (County)

The following parties agree to a change in ownership and/or operational control under the above referenced permit effective (date).

(New Co-Permittee name and address) hereby assumes joint and severable responsibility, coverage, and liability under the permit for any obligations, duties, responsibilities and violations under said permit. (Current Permittee) shall remain liable under the permit for violations of the permit conditions up to and including the above referenced date AND until a Notice of Termination is filed and acknowledged by the (Conservation District OR DEP Regional Office).

[The following paragraph should be used for multiple co-permittees.]

Attached is a description of site responsibilities and a map or plan drawing depicting the limits of permit responsibility, coverage, and liability for each co-permittee.

(Current Permittee(s)) (Company Name, if applicable)	(New Co-permittee(s))

TRANSFEREE AGREEMENT
ASSUMPTION OF RESPONSIBILITY UNDER A GENERAL OR INDIVIDUAL NPDES PERMIT FOR STORMWATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITIES

_____ (Permit Number)

_____ (Name of Facility/Project)

_____ (Municipality)

_____ (County)

The following parties agree to transfer ownership and/or operational control under the above referenced permit. (Transferee name & address) hereby assumes, effective _____ (date) _____ all responsibility, coverage and liability under the permit for any obligations, duties, responsibilities, and violations under said permit. (Transferor, Name and Address) shall remain liable under the permit for violations of the permit up to and including (date) AND until the (Conservation District/DEP Regional Office) acknowledges the Co-Permittee/Transferee Form. The Department may hold (transferor) and (transferee) jointly and severably liable under said permit for any breach of permit obligations, responsibilities, or violations.

[The following paragraph should be used for multiple transferees.]

Attached is a description of site responsibilities and a map or plan drawing depicting the limits of permit responsibility, coverage, and liability for each transferee.

(Current Permittee(s)	(Transferee(s))

INSTRUCTIONS FOR THE TRANSFEREE / CO-PERMITTEE APPLICATION FORM FOR A GENERAL OR INDIVIDUAL NPDES PERMIT FOR STORMWATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITIES

Who may file the Transferee/Co-Permittee Application Form: This form may be used by an applicant seeking to apply for either complete or partial operational control of earth disturbance activities at a site which are already authorized by either an Individual or General NPDES Permit. Federal NPDES Regulations at 40 C.F.R. §122.21(b) require that Operator(s) must become a permittee. An operator is a person who meets either of the following criteria: 1.) You have operational control of construction project plans and specifications, including the ability to make modifications to those plans and specifications; **OR** 2.) You have day-to-day operational control (supervision) of those activities at the project that are necessary to ensure compliance with the Erosion and Sediment Control Plan for the site or ensure compliance with other permit conditions, i.e., General Contractors. Subcontractors generally do not have supervisory control over earth disturbance activities and therefore usually **should not** become a permittee or co-permittee. If prior to construction activities, there is no operator, the owner must apply for the permit. Once the operator has been selected, the operator must use this application either to be made a co-permittee or to have the permit transferred to the contractor. **Failure of the operator to be added to the permit is a violation of federal and state law and regulation.**

Where to file the Transferee/Co-Permittee Application Form: Send this form to the reviewing entity, either to the local county conservation district that is participating as the reviewing entity or, if the Department is the reviewing entity, to the appropriate DEP regional office, Soils and Waterways Section.

When to file the Application: This application must be filed at least 30 days prior to the proposed change of ownership and/or operational control which will result in the transfer of permit responsibility, coverage and liability.

Completing the Application: **TYPE OR PRINT IN BLOCK LETTERS IN THE APPROPRIATE SPACES**

Section A. **Permit Information** – Check the appropriate box and enter the Permit Number and date of issuance of the existing Individual or General NPDES Permit assigned to the construction activity at the site identified in Section C below.

Section B. **Current Permittee Information** - Enter the full name, address and telephone number of the individual or organization and contact person that is the current permittee. The Regional Office can supply the Client ID # and Applicant Code, if known.

Section C. **Site Information** - Enter the DEP Site ID#, site name, site address/location, county and municipality of the site where the construction activity authorized by the NPDES Permit is located. Include the date on which the transfer of Permit responsibility, coverage and liability will occur. The Regional Office can supply the Site ID #.

Section D. **Transferee/Co-Permittee Information** - Enter the full name, address and telephone number of the individual or organization and contact person that is applying to assume operational control of construction activities at the site. The Regional Office can supply the Client ID # and Applicant Code, if known.

Section E. **Compliance Review -** The individual or organization referenced in Section D must indicate if any other environmental permits have been received or are pending from DEP as well as their past compliance history and if they are currently in compliance with environmental laws, rules and regulations, permits, orders and schedules of compliance.

Section F. **Certification and Signature of Applicant** - The new Transferee/Co-Permittee Applicant (named in Section D) must complete the required certification that the information contained in this application is true, accurate, and complete; the BMPs are or will be designed and fully implemented in accordance with the NPDES Permit requirements and will meet the applicable standards and limitations of the permit; and further that the applicant has read, understands and agrees to abide by the terms and conditions of the permit. The application shall be signed as follows:

a. **For a corporation** -- By a responsible corporate officer, which means: (1) A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or (2) The manager of one or more manufacturing, production or operating facilities if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;

b. **For a partnership or sole proprietorship** -- By a general partner or the proprietor, respectively; or

c. **For a municipality, State, Federal or other public agency** -- by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes: (1) the chief executive officer of the agency, or (2) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of EPA).

The application shall be notarized in the space provided.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES

90 East Union Street - 2nd Floor
Wilkes-Barre, PA 18701-3296
March 20, 1995

(717) 826-2553

Northeast Regional Office

The Department of Army
Baltimore District
U.S. Army Corps of Engineers
P.O. Box 1715
Baltimore, MD 21203-1715

Attention: Dr. James F. Johnson, Chief
Planning Division

RE: 401 Certification Request
Wyoming Valley Levee Raising Project
Luzerne County

Dear Dr. Johnson:

This will acknowledge receipt of your request for certification for the above-referenced project under Section 401 of the Federal Clean Water Act.

Enclosed is a copy of the "Notice of Final Action on Request for Certification Under Section 401 of the Federal Water Pollution Control Act of 1977" which will be published in the Pennsylvania Bulletin in the near future.

You are hereby notified that water quality certification is granted for this project. Please note that this certification does not extend to the inflatable dam proposal, which has not yet been presented to the Department for consideration.

If you should have any questions regarding this letter, please do not hesitate to contact me at the above number.

Sincerely,

Kate Crowley

Kate Crowley
Program Manager
Water Management Program

Enclosure

(ATTACHMENT

Notice of Final Action on Request for Certification under Section 401 of the Federal Water Pollution Control Act of 1977

Except as otherwise noted below, the Department of Environmental Resources, under Section 401(a) of the Federal Clean Water Act (33 U.S.C.A. Section 1341(a)), certifies that the construction and operation herein described will comply with all applicable provisions of sections 301-303, 306 and 307 of that Act, and that the construction will not violate applicable Federal and State water quality standards.

Any person aggrieved by this action may appeal, under section 4 of the Environmental Hearing Board Act (35 P.S. Section 7514) and 2 Pa.C.S. Sections 501-508 and 701-704 (relating to the Administrative Agency Law), to the Environmental Hearing Board, Second Floor, Market Street State Office Building, 400 Market Street, P.O. Box 8457, Harrisburg, PA 17105-8457, (717) 787-3483. TDD users may contact the Board through the Pennsylvania Relay Service, (800) 654-5984. Appeals must be filed with the Environmental Hearing Board within 30 days of receipt of written notice of this action unless the appropriate statute provides a different time period. Copies of the appeal form and the Board's rules of practice and procedure may be obtained from the Board. The appeal form and the Board's rules of practice and procedure are also available in braille or on audiotape from the Secretary to the Board at (717) 787-3483. This paragraph does not, in and of itself, create any right of appeal beyond that permitted by applicable statutes and decisional law.

Northeast Field Office, Water Management Program, 90 East Union Street - 2nd Floor, Wilkes-Barre, PA. 18701-3296

Certification Request Initiated by:

Department of the Army
US Army Corps of Engineers
PO Box 1715
Baltimore MD 21203-1715

Attention: Dr. James F. Johnson
Chief, Planning Division

Date of Initial Pennsylvania Bulletin Notice: February 18, 1995.

Project Description/Location:

The project consists of increasing the level of flood protection provided by Federal flood-protection projects located in the communities of Kingston-Edwardsville, Plymouth, Swoyersville-Forty Fort, Exeter, and Wilkes-Barre/ Hanover Township. The Water Quality Certification is being requested for the following specific activities: construction of a dug toe stabilization berm, construction of a boat launch ramp, infill of a wetland as a result of a levee berm construction, construction of a streambank stabilization berm, and demolition of 3 bridges and riverine-emplacement of subsequent rock fill to enhance aquatic habitat complexity.

Final Action on Request: Certification granted.

Pennsylvania Department of Environmental Protection

2 Public Square
Wilkes-Barre, PA 18711-0790
July 15, 1997

717-826-5485

Northeast Regional Office

Luzerne County Flood Protection Authority
Luzerne County Courthouse
200 North River Street
Wilkes-Barre, PA 18711

Attention: Mr. Frank P. Crossin, Chairman

RE: NPDES Permit No. PAS10R029
Kingston-Edwardsville Levee Raising
Kingston Borough, Edwardsville Borough and the City of Wilkes-Barre, Luzerne County

Dear Mr. Crossin:

Enclosed is the above-referenced permit which authorizes the discharge of storm water from the construction activity described in the final erosion and sedimentation control plan and the permit application. A copy of the final erosion and sedimentation control plan is also enclosed. Please ensure that the erosion and sedimentation control plan is fully implemented and available at the construction site.

The erosion and sedimentation control plan was reviewed to determine whether it is adequate to satisfy the requirements of the Chapter 102, Erosion Control Rules and Regulations. Neither the Department nor the Conservation District assume responsibility for the implementation of the plan or the proper construction and operation of the facilities contained in the plan.

Please read carefully Parts A, B and C of the permit which detail the terms and conditions of this authorization. Conservation District staff and/or representatives of the Department of Environmental Protection may inspect this earthmoving activity to determine compliance with applicable permit requirements, Chapter 92, 101 and 102 Rules and Regulations and the Clean Streams Law.

Permit requirements and federal regulations at 40 C.F.R. §122.21(b) require "when a facility or activity is owned by one person but is operated by another person, it is the operator's duty to obtain a permit". Please be advised that once a contractor has been selected for the project, the contractor must either be added as a co-permittee or the permit responsibility must be transferred to the contractor. The enclosed form must be used to designate a co-permittee/transferee.

Enclosed is a Notice of Termination (NOT) form to be completed and filed with the District once construction activities have ceased and final stabilization has been achieved.

The Conservation District must be notified by telephone or by mail at least seven days prior to the start of construction.

This authorization does not relieve the applicant from applying for and obtaining any and all additional permits or approvals from local, state or federal agencies for the construction activity described in the permit application.

If you have any questions regarding this permit, please contact this office, or the Luzerne Conservation District, at 717-674-7991.

Sincerely,

Kate Crowley

Kate Crowley
Program Manager
Water Management Program

Enclosure

cc: Luzerne County Conservation District
Howard J. Callendar, P.E., U.S. Army Corps of Engineers, Baltimore District

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF LAND AND WATER CONSERVATION

AUTHORIZATION TO DISCHARGE UNDER THE
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

PERMIT (FOR DISCHARGE OF STORM WATER FROM
CONSTRUCTION ACTIVITIES) NO. PA S10R029

In compliance with the provisions of the Clean Water Act, 33 U.S.C. Section 1251 et seq. (the "Act"), and Pennsylvania's Clean Streams Law, as amended, 35 P.S. Section 691.1 et seq.,

Luzerne County Flood Protection Authority
Luzerne County Courthouse
200 North River Street
Wilkes-Barre, PA 18711

is authorized to discharge storm water from construction activities from a facility/site located at the Kingston-Edwardsville Levee Raising project in Kingston Borough, Edwardsville Borough and the City of Wilkes-Barre, Luzerne County

to receiving waters named the Susquehanna River, in accordance with effluent limitations, monitoring requirements and other conditions set forth in Parts A, B, and C hereof.

This permit and the authorization to discharge shall commence on July 15, 1997 and expire at midnight, July 15, 2002.

The authority granted by this permit is subject to the following further qualifications:

1. If there is a conflict between the application, its supporting documents and/or amendments and the terms and conditions of this permit, the terms and conditions shall apply.

2. Failure to comply with the terms or conditions of this permit is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.

3. Application for renewal of this permit, or notification of intent to cease discharging by the expiration date, must be submitted to the Department at least 180 days prior to the above expiration date (unless permission has been granted by the Department for submission at a later date), using the appropriate NPDES permit application or Notice of Termination (NOT) form. In the event that a timely and complete application for renewal has been submitted and the Department is unable, through no fault of the permittee, to reissue the permit before the above expiration date, the terms and conditions of this permit will be automatically continued and will remain fully effective and enforceable pending permit reissuance or denial of the application for permit renewal.

4. This permit will be terminated if construction activities have been completed prior to the expiration date of this permit. For purposes of this permit, construction activities are completed when permanent stabilization of the site is attained; as defined in Part B.3 of this permit and Chapter 102 of the Department's Rules and Regulations.

5. No condition of this permit shall release the permittee from any responsibility or requirement under Pennsylvania, or federal environmental statutes or regulations, or local ordinances.

PERMIT ISSUED

BY Kate Crowley

TITLE Program Manager, Water Management Program

DATE 7/15/97

NPDES PERMIT NO. PAS10R029

PART A

EFFLUENT LIMITATIONS, SELF-MONITORING AND REPORTING REQUIREMENTS

1. EFFLUENT LIMITATIONS

Effluent limitations are provided in the permit as Erosion and Sedimentation Control (E&S) plans and Preparedness Prevention and Contingency (PPC) plans, and other Best Management Practices (BMPs) which restrict the quantity and rate of sediment discharge into surface waters of the Commonwealth. Any specific numeric effluent limits necessary to assure that instream water quality criteria are attained and instream uses are protected are set forth in Appendix A, if applicable.

2. MONITORING REQUIREMENTS

In the event the permittee monitors storm water discharge outfalls regulated under this permit, all monitoring data shall be reported in accordance with Part A.3 of this permit.

The Department, and the local Conservation District when acting as the processing entity, reserve the right to enter onto the site to conduct monitoring or require monitoring where necessary in appropriate circumstances such as where a danger of water pollution is present, or water pollution is suspected to be occurring from a construction activity subject to this permit. The permittee shall commence such monitoring upon notification from the Department, or the local Conservation District when acting as the processing entity.

Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge.

3. REPORTING AND RECORD KEEPING

a. Reporting of Monitoring Results.

In the event monitoring of outfalls is conducted, monitoring results shall be summarized on a Discharge Monitoring Report Form (DMR) and submitted to the Department on an annual basis, postmarked no later than

January 31st of each year. If the construction activity is terminated (see condition 4 in the permit cover sheet) prior to the 31st of that year, the DMR should be submitted upon the termination. (DMR forms can be obtained from the appropriate regional office of the Department.) A signed copy of the DMR Form and all other reports required herein, shall be submitted to the Department's regional office at the following address:

b. Non-Compliance Reporting.

(1) Required reporting. The permittee shall report non-compliance to the Department and the local County Conservation District, when acting as the processing entity, in accordance with the following:

(a) 24-Hour Oral Reporting - the permittee shall give at least a 24-hour advanced notice to the Department and the local County Conservation District, when acting as the processing entity, of any planned changes to the permitted activity or facility that may result in non-compliance with permit requirements. The permittee shall also report non-compliance with any term or condition of this permit to the Department and the local County Conservation District, when acting as the processing entity, within 24 hours of becoming aware of the non-compliance.

(b) Follow-up Written Reporting - where the permittee orally reports the information in Part A.3.b within the previously mentioned 24-hour time period, a written submission outlining the reported information must be submitted to the Department and the local County Conservation District, if acting as the processing entity, upon request.

(c) Other Reporting - the permittee shall report all instances of non-compliance, which are not reported pursuant to (a) and (b) above, at least annually.

(d) Non-compliance reporting pursuant to A.3.b.(1)(a)-(c) shall not excuse a person from immediate notification to the Department of incidents causing or threatening pollution pursuant to 25 Pa. Code §101.2(a).

(2) Required Information. The reports and notifications required in Part A.3.b.(1) above shall contain the following information:

(a) A description of the discharge and cause of non-compliance;

(b) The period of non-compliance, including exact dates and times and/or the anticipated time when the discharge will return to compliance; and

(c) Steps being taken to reduce, eliminate, and prevent recurrence of the non-complying discharge.

c. **Test Procedures.**

Unless otherwise specified in this permit, the test procedures for the analysis of pollutants shall be those contained in 40 C.F.R. Part 136, alternate test procedures approved pursuant to that part, or other alternate procedures approved by the Department.

d. **Recording of Results**

For each measurement or sample taken pursuant to the requirements of this permit, the permittee shall record the following information:

(1) The exact place, date, and time of sampling or measurements;

(2) The person(s) who performed the sampling or measurements;

(3) The dates the analyses were performed;

(4) The person(s) who performed the analyses;

(5) The analytical techniques or methods used; and

(6) The results of such analyses.

e. Retention of Records.

The permittee shall retain records of all monitoring activities and results (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation), copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of three years from the date of the sample, measurement, report or application. This period may be extended by request of the Department and the local County Conservation District, if acting as the processing entity, at any time.

f. Availability of Reports.

Except for data determined to be confidential under §607 of the Clean Streams Law all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the Department. As required by the Clean Water Act, the Clean Streams Law, and 25 Pa. Code §92.63, permit applications, permits, and effluent data shall not be considered confidential

4. DISCHARGES CONSISTENT WITH TERMS AND CONDITIONS OF THE PERMIT

All discharges authorized by this NPDES permit shall be consistent with the terms and conditions of the permit.

5. NEW TOXIC EFFLUENT STANDARDS OR PROHIBITIONS

If a toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is established under §307(a) of the Federal CWA for a toxic pollutant which is present in the permittee's discharge, and such standard or prohibition is more stringent than any limitation upon such pollutant in the NPDES permit, the Department shall revise or modify the permit in accordance with the toxic effluent standard or prohibition and so notify the permittee. In the absence of a Departmental action to modify or to revoke and reissue this permit, any toxic effluent standard or prohibition established under Section 307(a) of the Act is considered to be effective and enforceable against the permittee.

PART B

STANDARD CONDITIONS

1. MANAGEMENT REQUIREMENTS

a. Permit Modification, Termination, or Revocation and Reissuance.

(1) This permit may be modified, suspended, revoked and reissued, or terminated during its term for any of the causes specified in 25 Pa. Code Chapter 92 including, but not limited to, the following:

(a) Violation of any terms or conditions of the permit;

(b) Obtaining a permit by misrepresentation or failure to discuss fully all relevant facts; and

(c) A change in any condition that requires either a temporary or permanent reduction or elimination of the permitted discharge.

(2) The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated non-compliance, does not stay any permit condition.

(3) Permit modification or revocation will be conducted in accordance with 25 Pa. Code Chapter 92.

b. Duty to Provide Information.

(1) The permittee shall furnish to the Department and the local County Conservation District, if acting as the processing entity, within a reasonable time, any information that the Department or the local County Conservation District may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit.

(2) The permittee shall furnish to the Department and the local County Conservation District, if acting as the processing entity, upon request, copies of records required to be kept by this permit.

(3) When the permittee becomes aware that it failed to submit any relevant facts or submitted incorrect information in the permit application or in any other report to the Department, or the local County Conservation District if acting as the processing entity, it shall promptly submit such facts or information.

(4) The permittee shall give advance notice to the Department, and the local County Conservation District if acting as the processing entity, of any planned physical alterations, including facility expansions, or additions to the permitted activity. The permittee shall notify the Department and the local County Conservation District of any changes in the construction activities which will result in increased sediment loading prior to the modification.

c. Signatory Requirements.

All Permit Applications (including Transferee/Co-Permit Applications), Notices of Termination (NOT), Erosion and Sedimentation Control Plans, reports, certifications or information either submitted to the Department, a local County Conservation District, or the operator of a large or medium municipal separate storm sewer system, or that this permit requires be maintained by the permittee, shall be signed.

(1) All Permit Applications (including Transferee/Co-Permittee Applications), and Notices of Termination (NOT) shall be signed as follows:

(a) For a corporation: by a responsible corporate officer. For the purposes of this part, a responsible corporate officer means: (1) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or (2) the manager of one or more manufacturing, production or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $25,000,000 (in second-quarter 1980 dollars) if authority to sign documents has

been assigned or delegated to the manager in accordance with corporate procedures;

(b) For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or

(c) For a municipality, state, federal, or other public agency: by either a principal executive officer or ranking elected official. For purposes of this part, a principal executive officer of a federal agency includes (1) the chief executive officer of the agency, or (2) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of EPA).

(2) All reports required by the permit and other information requested by the Department or a local County Conservation District shall be signed by a person described above or by a duly authorized representative of that person.

A person is a duly authorized representative only if:

(a) The authorization is made in writing by a person described above and submitted to the Department or the local County Conservation District with the reports.

(b) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of manager, operator, superintendent, or position of equivalent responsibility or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position).

(3) Changes in Authorization.

If an authorization is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new

authorization satisfying the requirements of Part B.1.c must be submitted to the Department, and the local County Conservation District if acting as the processing entity, prior to or together with any reports, information, or applications to be signed by an authorized representative.

d. Transfer of Ownership or Control.

(1) This permit is not transferable to any person except after notice has been provided to the Department or the local County Conservation District, if acting as the processing entity, and upon written approval by the Department or the local County Conservation District, as appropriate.

(a) In the event of any pending change in control or ownership of the facilities or construction activities from which the authorized discharges emanate, the permittee shall notify the Department, and the local County Conservation District if acting as the processing entity, by submitting the ER-LWC-41 Form entitled "Transferee/Co-Permittee Application" at least 30 days prior to the change in ownership or control.

(b) The Transferee/Co-Permittee Application form shall be accompanied by a written agreement between the existing permittee and the new owner or operator (transferee or co-permittee) stating that if the permit is being transferred the existing permittee shall be liable under the permit for violations of the permit up to and until the date of coverage transfer and that the new owner or operator (transferee) shall be liable under the permit for permit violations from that date on. If a new co-permittee is being added, the written agreement between the existing permittee and the new co-permittee shall state that the existing permittee shall be liable under the permit up to and until the date the new co-permittee is added to the permit and that both co-permittees shall be jointly and severally liable under the permit for permit violations from that date on.

(c) After receipt of the above required documentation, the Department, or local County Conservation District if acting as the processing entity, shall notify the existing permittee and the new owner or operator (transferee or co-permittee) of its decision concerning approval of the transfer.

(d) Discharge Monitoring Reports and any other report forms required under the permit shall have the names changed to reflect a transfer of ownership.

(2) For purposes of this permit, operators shall include general contractors. If, prior to construction activities, the owner is the permittee and an operator/general contractor is later identified to become a co-permittee, the co-permittee/applicant shall submit to the Department, or the local County Conservation District if acting as the processing entity, a properly completed Transferee/Co-Permittee Application form ER-LWC-41 and the written agreement described in (1)(b) above at least 30 days prior to the change in ownership or control. For purposes of this permit, this modification is considered to be a minor permit modification.

e. **Removed Substances**.

Solids, sludges, filter backwash, or other pollutants removed in the course of treatment or control of wastewaters shall be managed or disposed of pursuant to the Solid Waste Management Act, 35 P.S. §6018.101, et seq., and regulations promulgated thereto, in a manner such as to prevent any pollutant from such materials from adversely affecting the environment.

f. **Facilities Operation**.

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee as efficiently as possible to achieve compliance with the conditions of this permit and with the requirements of erosion and sedimentation control plans. Proper operation and maintenance includes, but is not limited to, effective performance based on designed facilities capabilities, adequate

staffing and training, and adequate laboratory contr and appropriate quality assurance procedures. Proper operation and maintenance requires the operation of backup or auxiliary facilities or similar systems, installed by a permittee only when necessary to achieve compliance with the conditions of the permit.

g. Remediation Loss or Failure of BMP's or Treatment Facilities

Upon reduction, loss or failure of any BMP or treatment facility, in order to maintain compliance with its permit, the permittee shall control the construction activities and any associated discharges to ensure that there is no pollution discharged to surface waters of the Commonwealth until the BMP or treatment facility is rebuilt or repaired, or an alternative BMP or treatment facility is provided. This requirement is applicable in situations where the BMP or treatment facility is rendered ineffective, whether the cause or source of the reduction, loss or failure is within or beyond the control of the permittee.

h. Adverse Impact.

The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

2. RESPONSIBILITIES

a. Duty to Comply.

The permittee must comply with all conditions of this permit. Any permit non-compliance constitutes a violation of the Pennsylvania Clean Streams Law and the Clean Water Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.

b. Penalties for Violations of Permit Conditions.

(1) Criminal.

(a) **Negligent Violations.** The CWA provides that any person who negligently violates permit conditions

implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a fine or not less than $2,500 nor more than $25,000 per day of violation, or by imprisonment for not more than 1 year, or both. In addition, Section 602 of the Clean Streams Law provides criminal penalties for violations of permit conditions.

(b) **Knowing Violations.** The CWA provides that any person who knowingly violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a fine of not less than $5,000 nor more than $50,000 per day of violation, or by imprisonment for not more than 3 years, or both. In addition, Section 602 of the Clean Streams Law provides criminal penalties for violations of permit conditions.

(c) **Knowing Endangerment.** The CWA provides that any person who knowingly violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act and who knows at that time that he is placing another person in imminent danger of death or serious bodily injury is subject to a fine of not more than $250,000, or by imprisonment for not more than 15 years, or both. In addition, Section 602 of the Clean Streams Law provides criminal penalties for violations of permit conditions.

(d) **False Statement.** The Clean Water Act provides that any person who knowingly makes any false material statement, representation, or certification in any application, record, report, plan, or other document filed or required to be maintained under the Act or who knowingly falsifies, tampers with, or renders inaccurate, any monitoring device or method required to be maintained under the Act, shall upon conviction, be punished by a fine of not more than $10,000 or by imprisonment for not more than 2 years, or by both. If a conviction is for a violation committed after a first conviction of such person under this paragraph, punishment shall be by a fine of not more than $20,000 per day of violation, or by imprisonment of not more than 4 years, or by both. (See Section 309(c)(4) of the Clean Water Act). In addition, the provisions of the Pennsylvania Crimes Code relating to False Swearing and Unsworn Falsification provide criminal

sanctions for such actions. See 18 Pa. C.S. §§4903-4904.

(2) **Civil Penalties.** The Clean Water Act provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a civil penalty not to exceed $25,000 per day for each violation. In addition, Section 605 of the Pennsylvania Clean Streams Law provides for penalties of up to $10,000 a day for violations of permit conditions, for each separate offense.

(3) **Administrative Penalties.** The Clean Water Act provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to an administrative penalty, as follows:

(a) **Class I penalty.** Not to exceed $10,000 per violation nor shall the maximum amount exceed $25,000.

(b) **Class II penalty.** Not to exceed $10,000 per day for each day during which the violation continues nor shall the maximum amount exceed $125,000.

c. **Need to Halt or Reduce Activity not a Defense.**

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

d. **Property Rights.**

The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges, nor does it authorize any injury to private property nor any invasion of personal rights, nor any infringement of Federal, Pennsylvania or local laws or regulations.

e. **Severability.**

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other

circumstances, and the remainder of this permit shall not be affected thereby.

f. Other Laws.

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable Pennsylvania Law or regulation under authority preserved by Section 510 of the Clean Water Act, 33 U.S.C. Section 1361, or under Section 311 of the CWA, 33 U.S.C. Section 1321.

g. Right of Entry.

Pursuant to Sections 5(b) and 305 of Pennsylvania's Clean Streams Law (35 P.S. Section 691.1(b) and 691.305), 25 Pa Code Chapter 92, and Section 1917-A of the Administrative Code, the permittee shall allow the head of the Department, the EPA Regional Administrator, and/or an authorized representative of EPA, DEP, Conservation District, or, in the case of a facility which discharges to a municipal separate storm sewer, an authorized representative of the municipal operator or the separate storm sewer receiving the discharge, upon the presentation of credentials and other documents, as may be required by law, to:

(1) Enter upon the permittee's premises where a regulated facility or activity is located or conducted or where records must be kept under the conditions of this permit;

(2) At any reasonable time, have access to and copy any records that must be kept under the terms and conditions of this permit; inspect any facilities or equipment (including monitoring and control equipment) and sample any substances or discharge at any location.

3. DEFINITIONS

a. "Best Management Practices (BMPs)" means activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce pollution to waters of the Commonwealth. BMPs include properly designed and implemented Erosion and Sedimentation (E & S) Control Plans, Preparedness, Prevention, and Contingency Plans, Storm Water

(3) Management plans; Pollution Prevention plans, and other treatment requirements, operating procedures, and practices which minimize or eliminate runoff, spillage, leaks, and other drainage from the construction activity.

b "CWA" means the Clean Water Act or the Federal Water Pollution Control Act

c "Department" means the Department of Environmental Protection of the Commonwealth

d "Large and medium municipal separate storm sewer system" means all municipal separate storm sewers that are either:

(a) Located in an incorporated place with a population of 100,000 or more as determined by the latest Decennial Census by the Bureau of Census; or

(b) Located in the counties with unincorporated urbanized populations of 100,000 or more, except municipal separate storm sewers that are located in the incorporated places, townships or towns within such counties; or

(c) Owned or operated by a municipality other than those described in paragraph (a) or (b) and that are designated by the Director as part of the large or medium municipal separate storm sewer system.

e "Municipality" means any county, city, borough, town, township, school district, institution, or any authority created by one or more of the foregoing. For the purposes of this definition, a town shall mean an unincorporated town.

f "Outfall" means point source as defined by 25 Pa. Code Section 92.1 which is any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, vessel, or other floating craft from which pollutants are or may be discharged.

g "Person" shall be construed to include any natural person(s) partnership, association, corporation, business organization, or any agency, instrumentality, or entity of Federal or State Government. Whenever used in any

clause prescribing and imposing a penalty, or imposing a fine or imprisonment, or both, the term "person" shall not exclude the members of an association and the directors, officers, or agents of a corporation.

h. **"Processing entity"** - for the purposes of this permit, shall generally mean the local county conservation district if the district is also participating as the reviewing entity for coverage under the NPDES general permit for storm water discharges from construction activities. Persons seeking an individual NPDES permit must contact the local county conservation district in the county in which the construction activity is located to ascertain if the district is participating as the entity processing individual NPDES permit applications. The Department is the processing entity in a given county if the local county conservation district chooses not to participate in the review of Notices of Intent (NOI) for coverage under the General Permit for Discharges of Storm Water from Construction Activities and in the processing of applications submitted for the Individual NPDES Permit.

i. **"Runoff Coefficient"** means the fraction of total rainfall that will appear at the conveyance as runoff.

j. **"Stabilization"** means the proper placing, grading and/or covering of soil, rock or earth to insure its resistance to erosion, sliding or other movement. The standard for vegetative cover to be a uniform coverage or density is 70% across the disturbed area.

k. **"Storm water"** means storm water runoff, snow melt runoff, and surface runoff and drainage.

l. **"Storm water associated with construction activity"** means the discharge into surface waters of the Commonwealth, municipal separate storm sewers, or non-municipal separate storm sewers from any conveyance which is used for collecting and conveying storm water and which is related to construction activities. Construction activities include clearing, grading and excavation activities except: operations that result in the disturbance of less than five acres of total land area which are not part of a larger common plan of development or sale. The term does not include non-point source storm water discharges from silvicultural activities (See §92.4(a)(4) for a definition of "silvicultural point sources").

m. "Surface waters of the Commonwealth" shall mean any and all rivers, streams, creeks, rivulets, impoundments, ditches, watercourses, storm sewers, lakes, dammed water, ponds, springs and all other bodies or channels of conveyance of surface water, including wetlands, or parts thereof, whether natural or artificial, within or on the boundaries of this Commonwealth.

PART C

OTHER CONDITIONS

1. PROHIBITIONS ON NON-STORM WATER DISCHARGES

All discharges covered by this permit shall be composed entirely of storm water associated with construction activities. Discharges other than storm water must be in compliance with an NPDES permit (other than this permit) issued for the discharge.

2. EROSION AND SEDIMENTATION CONTROL PLANS

An Erosion and Sedimentation Control (E&S) Plan must be developed and implemented for each activity covered by this permit. Each plan must be submitted to and approved by the appropriate Conservation District, or its designee, prior to the authorization to discharge under this permit. E&S Plans must be prepared in accordance with the Bureau of Land and Water Conservation's "Erosion and Sedimentation Program Manual", Chapter 102 of the Department's Rules and Regulations, and additional requirements contained herein. Applicable requirements specified in submitted E&S Plans and any changes or revisions to the Plan if it is revised during the permit term are, upon authorization to discharge under this permit, incorporated by reference.

Feasibility of the E&S Plan, structural design and proper construction methods are the responsibility of the permittee. Failure of the control measures and facilities to achieve their intended purpose may require additional or modified control measures and facilities to be designed and constructed. Any changes to the approved E&S Plan, including changes to control measures and facilities or the points of discharge, must be submitted to the processing entity for review and approval prior to initiating the activity.

Prior to the start of operations at any spoil, borrow or other work area not detailed on the approved E&S Plan, whether located within or outside of the indicated construction limits, the permittee shall develop and have approved by the processing entity, a separate E&S Plan for each site.

The permittee shall contact the processing entity for clarification of any requirements contained in the E&S Plan.

E&S Plans required under this permit are considered reports that shall be available to the public under Section 607 of the Clean Streams Law, and §92.63 of the Department's regulations. The owner or operator of a facility with storm water discharges covered by this permit shall make plans available to the public upon request by the public. E&S Plans must be made available at the site of the construction activity.

3. **PROPER DISPOSAL OF BUILDING WASTES**

All construction/demolition wastes composed of building materials must be removed from the site and disposed of in accordance with the Department's Solid Waste Management Regulations at 25 Pa. Code §260.1 et seq., §271.1 et seq., and §287.1 et seq. No construction/demolition wastes or unused building materials shall be buried, dumped, or discharged at the site.

4. **APPROVED STATE OR LOCAL PLANS**

Facilities which discharge storm water associated with construction activities must include in their E&S Plan procedures and requirements specified in approved watershed storm water management plans, including local storm water management ordinances developed pursuant to the Pennsylvania Storm Water Management Act (P.L. 864; No. 167, Oct. 4, 1978). Applicable requirements specified in watershed storm water management plans approved by State or local officials are, upon authorization to discharge under this general permit, incorporated by reference.

5. **ADDITIONAL NOTIFICATION**

Facilities with at least one storm water discharge associated with construction activity to a large or medium municipal separate storm sewer system (systems serving a population of 100,000 or more) in addition to maintaining copies of discharge monitoring reports in accordance with Part A.3, must submit, when directed to do so, signed copies of monitoring results on Discharge Monitoring Report Forms to the operator of the municipal separate storm sewer system.

6. **PREPAREDNESS, PREVENTION AND CONTINGENCY PLANS**

If the potential exists for causing accidental pollution of air, land, or water, or for causing endangerment of public health and safety through accidental release of toxic, hazardous, or other polluting materials, the permittee must

develop a Preparedness, Prevention and Contingency (PPC) Plan. The PPC Plan shall be developed in accordance with 25 Pa. Code §101.3. The PPC Plan shall identify areas which may include but are not limited to waste management areas; raw material storage areas; temporary and permanent spoils storage areas; maintenance areas; and any other areas that may have the potential to cause non-compliance with the terms and conditions of this permit due to the storage, handling, or disposal of any toxic or hazardous substances such as oil, gasoline, pesticides, herbicides and solvents, etc. Best management practices shall be developed and implemented for each identified area. The PPC Plan shall be maintained on-site at all times and shall be made available for review at the request of the Department or the local County Conservation District.

7. **ADDITIONAL OPERATIONAL, MAINTENANCE, INSPECTION, ETC. REQUIREMENTS**

a. If the earthmoving activities authorized by this permit at any time create conditions that cause or threaten to cause pollution to waters of the Commonwealth, the permittee shall immediately implement remedial measures to correct the conditions.

b. The permittee shall notify the county conservation district and the Regional Office, Soil and Waterways Section, by telephone or certified mail, at least seven days before construction is to begin. Both parties shall be invited to a pre-construction conference with the person(s) undertaking the earthmoving activity.

c. The erosion control measures and facilities shall be constructed and maintained under the supervision of a competent individual trained and experienced in erosion control.

d. The staging of earthmoving activities and maintenance directions contained in the plan must be closely followed. Frequent inspections shall be conducted by the permittee to detect impairment of the controls. Repairs to impaired erosion control measures and facilities must be made immediately.

e. Sediment shall at no time accumulate in control measures or facilities to a depth sufficient to limit storage capacity or interfere with the settling efficiency or

functioning of the device. Sediment shall be removed and stabilized in a manner that will not create pollution.

f. Discharges of sewage or industrial waste to erosion control measures and facilities are not permitted.

g. The permittee shall notify the processing entity when all areas of earthmoving are stabilized so that a final inspection of the site may occur.

h. Issuance of this permit does not authorize earthmoving activities in delineated wetlands as depicted in the approved E&S Plan. Any changes to the approved plan resulting from other permits from the Department that authorize activity in wetlands must be submitted to the processing entity for review and approval prior to initiating the activity.

SECTION 01050

JOB CONDITIONS

PART 1 GENERAL

1.1 LAYOUT OF WORK

1.1.1 Location of Bench Marks and Control Points

The Government has established bench marks and horizontal control points at the site of the work. These are described and indicated on contract drawings. Copies of control point descriptions are attached to the end of this section.

1.1.2 Layout Using Control Points

From these control points the Contractor shall lay out the work by establishing all lines and grades at the site necessary to control the work and shall be responsible for all measurements that may be required for the execution of the work to the location and limit marks prescribed in the specifications or on the contract drawings.

1.1.3 Minimum Requirements

The bench marks and control points above are minimum requirements and the Contractor shall place and establish such additional stakes and markers as may be necessary for control and guidance of his construction operations. All survey data shall be recorded in accordance with standard and approved methods. All field notes, sketches, recordings and computations made by the Contractor in establishing above horizontal and vertical control points shall be available at all times during the progress of the work for ready examination by the Contracting Officer or his duly authorized representative.

1.1.4 Tools, Labor and Markers

The Contractor shall furnish, at his own expense, all such stakes, spikes, steel pins, templates, platforms, equipment tools and material and all labor as may be required in laying out any part of the work from the control points established by the Government. It shall be the responsibility of the Contractor to maintain and preserve all stakes and other markers established by him until authorized to remove them. If any of the control points established at the site by the Government are destroyed by or through the negligence of the Contractor prior to their authorized removal, they may be replaced by the Contracting Officer, and the expense of replacement will be deducted from any amount due or which may become due the Contractor. The Contracting Officer may require that work be suspended at any time when horizontal and vertical control points established at the site by the Contractor are not reasonably adequate to permit checking the work. Such suspension will be withdrawn upon proper replacement of the control points. (ECI 7-672.2)

1.2 PHYSICAL DATA: (APR 1984)

Data and information furnished or referred to below is for the Contractor's

information. The Government shall not be responsible for any interpretation or conclusion drawn from the data or information by the Contractor. (CENAB)

1.2.1 Transportation Facilities

WYOMING VALLEY, PA.

Highways: The project is accessible by State Route 11 and U.S. Route 81.

Railroad: A branch line of CONRAIL services the project site.

Airports: The Wilkes-Barre/Scranton Airports serve the area with several airlines providing scheduled service.

1.2.2 Previous Exploration

Subsurface exploration has been performed for past contracts. The location of these and the field laboratory data for all exploration are available for inspection in the Baltimore District, Corps of Engineers, Geotechnical Engineering Branch, Room 9250, City Crescent Building, 10 South Howard Street, Baltimore, Maryland. Soils and rock samples are also available for inspection; however, prospective bidders are required to call (410) 962-4045 between the hours of 9:00 a.m. and 3:30 p.m., Monday through Friday (excluding Federal Holidays), a minimum of 24 hours in advance to arrange a time and date for the inspection of the samples.

1.2.3 Construction Site Category

The existing flap gates are suspected to be coated with lead-based paint. The Contractor shall protect his personnel, the public, and the environment in accordance with specification section 09965.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Shut Down Utility Services; G AR.

Prior approval for service/utility interruptions.

Advance Notice

When changes and/or relocations are required.

Checklist; G AR

A Risk Assessment for excavation and other work in the vicinity of utilities.

Contingency Plan; G AR

Proposed temporary and/or emergency flood protection measures.

SD-05 Design Data

Survey Data; G AR

The establishing of bench marks and horizontal control points.

1.4 UTILITIES

1.4.1 Availability of Utilities Including Lavatory Facilities: (JUN 1980)

It shall be the responsibility of the Contractor to provide all utilities he may require during the entire life of the contract. He shall make his own investigation and determinations as to the availability and adequacy of utilities for his use for construction purposes and domestic consumption. He shall install and maintain all necessary supply lines, connections, piping, and meters if required, but only at such locations and in such manner as approved by the Contracting Officer. Before final acceptance of work under this contract, all temporary supply lines, connections and piping installed by the Contractor shall be removed by him in a manner satisfactory to the Contracting Officer. (CENAB)

1.4.1.1 Sanitation Facilities

The Contractor shall provide and maintain within the construction area minimum field-type sanitary facilities approved by the Contracting Officer. Toilet facilities in private residences or businesses will not be available to Contractor's personnel. Toilet facilties shall be kept clean as directed by the Contracting Officer, and doors securely locked in the evening when work crews leave the area.

1.4.2 Interruption of Utilities: (1972)

a. No utility services shall be interrupted by the Contractor to make connections, to relocate, or for any purpose without approval of the Contracting Officer.

b. Request for permission to shut down utility services shall be submitted in writing to the Contracting Officer not less than 17 days prior to proposed date of interruption. The request shall give the following information:

c. Nature of Utility (Gas, L.P. or H.P., Water, Etc.)

d. Size of line and location of shutoff.

e. Buildings and services affected.

f. Hours and date of shutoff.

g. Estimated length of time service will be interrupted.

h. Services will not be shut off until receipt of approval of the proposed hours and date from the Contracting Officer.

i. Shutoffs which will cause interruption of Government work operations as determined by the Contracting Officer shall be accomplished during regular non-work hours or on non-work days of the local government or private entity without any additional cost to the Government.

j. Unless otherwise approved by the Contracting Officer operation of valves on water mains will be by local utility company personnel. Where shutoff of water lines interrupts service to fire hydrants or fire sprinkler systems, the Contractor shall arrange his operations and have sufficient material and personnel available to complete the work without undue delay or to restore service without delay in event of emergency.

k. Flow in gas mains which have been shut off shall not be restored until the local utility company inspector has determined that all items serviced by the gas line have been shut off. (CENAB)

1.4.3 Alterations to Utilities: (AUG 1968)

Where changes and relocations of utility lines are noted to be performed by others, the Contractor shall give the Contracting Officer in writing advance notice at least thirty days of the time that the change or relocation is required. In the event that, after the expiration of thirty days after the receipt of such notice by the Contracting Officer, such utility lines have not been changed or relocated and delay is occasioned to the completion of the work under this contract, the Contractor will be entitled to a time extension equal to the period of time lost by the Contractor after the expiration of said thirty day period. Any modification to existing or relocated lines required as a result of the Contractor's method of operation shall be made wholly at the Contractor's expense and no additional time will be allowed for delays incurred by such modifications. (CENAB)

1.4.4 Utility Markings

The Contractor shall contact the PA One-Call Service, a minimum of 48 hours, requesting utility location markings prior to any excavation. The Contractor shall not proceed with any excavation until all utilities, including abandoned utilities, have been marked to the satisfaction of the Contracting Officer. Prior to requesting the marking of utilities, the Contractor shall stake out proposed excavations and limits of work with white lines ("White Lining"). It is the Contractor's responsibility to ensure that all permits (excavation or otherwise) are current and up-to-date without expiration. In addition to the above requirements the Contractor shall:

a) Visually survey and verify that all utility markings are consistent with existing appurtenances such as manholes, valve boxes, poles, pedestals, pad-mounted devices, gas meters, etc. prior to any excavation.

b) Hand dig test holes to verify the depth and location of all utilities prior to any mechanical excavation within the limits of work. Other non-damaging methods for utility verification, as indicated in (d) below, may be considered subject to approval by the Contracting Officer. Also, verify that any abandoned utilities are not active.

c) Preserve all utility markings for the duration of the project to the furthest extent possible.

d) When excavation is performed within 2 feet of any utility line, a non-damaging method of excavation shall be used. The non-damaging method shall be hand digging. Other non-damaging methods, such

as, soft digging, vacuum excavation, pneumatic hand tools, may be considered subject to approval by the Contracting Officer.

e) Regardless of the type of excavation, the Contractor shall notify the Contracting Officer a minimum of 72 hours prior to any excavation activity. Failure to notify the Contracting Officer can result in the issuance of a "Stop Work" order, which shall not be justification for contract delay or time extension. The Government reserves the right to have personnel present on site during any type of excavation.

f) The Contractor's Quality Control System Manager shall ensure that all excavation requirements herein are met at the time of the preparatory phase of quality control, and that the excavation procedures are reviewed during the preparatory phase meeting. This preparatory phase of control shall also establish and document contingency plans and actions to be followed in the event that existing utilities are damaged or interrupted. Locations of shut off or isolation devices along with other safety features shall be established and their operation reviewed.

g) Any work other than excavation in the vicinity of a utility, that could damage or interrupt a utility, such as, exterior or interior work near transformers, power lines, poles, above ground gas lines, gas meters, etc., shall be done with extreme care. The Contractor shall specifically note during the preparatory phase of quality control, the construction techniques to be used to preclude damaging or interrupting any utility. This preparatory phase of control shall also establish and document contingency plans and actions to be followed in the event that existing utilities are damaged or interrupted. Locations of shut off or isolation devices along with other safety features shall be established and their operation reviewed.

h) The Contractor shall complete a risk assessment, using the attached checklist, at least one week prior to the start of any excavation or other work in the vicinity of a utility. The risk assessment shall be submitted for government approval prior to any excavation or other work in the vicinity of a utility. A risk assessment shall be completed for each definable feature of work encountering utilities and shall include all utilities anticipated to be encountered.

1.5 DISPOSAL OF EXISTING MATERIAL AND EQUIPMENT: (DEC 1975)

All removed, dismantled or demolished material and/or equipment including rubble, scrap and debris not specified or indicated to be Government salvaged, reinstalled under this contract or otherwise retained for disposal on Government land will become the property of the Contractor and shall be promptly removed from the site and disposed of by the Contractor at his own expense and responsibility. (CENAB)

1.6 MAINTENANCE OF ACCESS: (DEC 1975)

The Contractor shall not block passage through paths in Kirby Park, or on levee crest or ramps, during performance of work under this contract. In addition, the Contractor shall at all times maintain safe and clear passage through these areas to allow minimal disruption of normal activities of the public. No equipment or materials are to be stored in public access paths

except those items that are necessary for progress of the immediate work. (CENAB)

1.7 PROTECTION OF GOVERNMENT AND PRIVATE PROPERTY AND PERSONNEL: (DEC 1975)

1.7.1 Protection of Equipment

All existing local Government or privately owned equipment within the work area shall be protected by the Contractor from damage caused by construction operations. As a minimum, the Contractor shall protect such items from any damage due to dust, vibration, water, heat or other conditions resulting from construction activities. Existing work damaged by construction operations shall be promptly repaired by the Contractor at his own expense.

1.7.2 Protection of Personnel

The Contractor shall protect personnel and onlookers by installing safety rails and/or barricades as applicable to prevent injury from unauthorized entry of personnel into work areas. Warning signs shall be erected as necessary to indicate Construction areas or hazardous zones. Work shall proceed in such manner as to prevent the undue spread of dust and flying particles.

1.7.3 Measures to Prevent Damage/Injury

The Contractor shall take such additional measures as may be directed by the Contracting Officer to prevent damage or injury to property or personnel and the general public. (CENAB)

1.8 STREET CLOSINGS: (MAY 1978)

When operations in connection with contract work necessitate the encroachment onto, or work adjacent to, or closing of streets, it shall be the Contractor's responsibility to arrange for traffic control in advance with the Contracting Officer and appropriate local and State officials. The Contractor shall provide all necessary traffic control plans (TCP's), personnel and devices as may be required by the Contracting Officer and the appropriate local and state laws, codes and regulations to accomplish the work. The Contractor, as a minimum, shall comply with the current Pennsylvania Department of Transportation "Work Zone Traffic Control Publication 203" (67 PA Code, Chapter 203) for contract work requiring traffic control. (CENAB)

1.8.1 Traffic Control Plan (TCP)

The Contractor shall submit a TCP to the Contracting Officer for approval. This plan shall include narrative and drawings showing proposed measures when construction operations affect vehicle flow and full or partial street closings. PADOT and local officials, as applicable, must approve the plan before any measures are implemented.

1.9 ORDER OF WORK AND COORDINATION WITH OTHER CONTRACTORS: (FEB 1979)

1.9.1 Other Contractors

Other Contractors are presently working in the same area. After award of this contract a meeting will be held with all contractor representatives and the Contracting Officer to develop a plan of work coordination. In

case of disagreement regarding use of an area the decision of the Contracting Officer will control. (CENAB)

1.9.2 Order of Work

The Contractor shall notify in writing to the Contracting Officer 30 days prior to commencing construction within Kirby Park to permit sufficient notice to local officials and the public. The following sequence of activities shall be complted prior to commencing any other contract work with the exception of layout work.

a) Contact PA One Call for Utility Clearance

b) Install required erosion and sedimentation controls

c) Erect appropriate construction fencing, railings, barricades and/or warning signs to protect the public and workers.

1.9.3 Non-Interference

The Contractor shall not interfere with materials, appliances, or workmen of local governments, private utilities, or any other contractor who may be working at the site. As far as praticable, all Contractors shall have equal rights to the use of all roads and grounds. In case of disagreement regarding use of an area the decision of the Contracting Officer will control.

1.10 SALVAGE MATERIAL AND EQUIPMENT: (OCT 1993)

The Contractor shall maintain adequate property control records for all materials and equipment specified to be salvaged. These records may be in accordance with the Contractor's system of property control, if approved by the property administrator. The Contractor shall be responsible for the adequate storage and protection of all salvaged materials and equipment and shall replace, at no cost to the Government, all salvage materials and equipment which are broken or damaged during salvage operations as the result of his negligence, or while in his care. (CENAB-EN-DT)

QUANTITY	DESCRIPTION
2	72-inch Flap Gates (Kirby Park Relief Culvert)

The above listed salvage material shall become the property of the Government. The Contractor shall deliver such salvage material to a location as directed by the Contracting Officer. (CENAB)

1.11 ASBESTOS HANDLING AND REMOVAL (FEB 85)

Through site investigations, friable asbestos has not been found, however if asbestos is encountered, its testing, removal and disposal is covered in "CHANGES" clause of the Contract Clauses. (CENAB)

1.12 TIME EXTENSIONS FOR UNUSUALLY SEVERE WEATHER

1.12.1 Procedure for Determination

This provision specifies the procedure for determination of time extensions for unusually severe weather in accordance the contract clause entitled "Default: (Fixed Price Construction)". In order for the Contracting Officer to award a time extension under this clause, the following conditions must be satisfied:

a. The weather experienced at the project site during the contract period must be found to be unusually severe, that is, more severe than the adverse weather anticipated for the project location during any given month.

b. The unusually severe weather must actually cause a delay to the completion of the project. The delay must be beyond the control and without the fault or negligence of the contractor.

1.12.2 Anticipated Adverse Weather Delays

The following schedule of monthly anticipated adverse weather delays is based on National Oceanic and Atmospheric Administration (NOAA) or similar data for the project location and will constitute the base line for monthly weather time evaluations. The contractor's progress schedule must reflect these anticipated adverse weather delays in all weather dependent activities.

MONTHLY ANTICIPATED ADVERSE WEATHER DELAY
WORK DAYS BASED ON (5) DAY WORK WEEK

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
7	6	6	7	7	6	4	5	3	5	4	4

1.12.3 Impact

Upon acknowledgment of the Notice to Proceed (NTP) and continuing throughout the contract, the contractor will record on the daily CQC report, the occurrence of adverse weather and resultant impact to normally scheduled work. Actual adverse weather delay days must prevent work on critical activities for 50 percent or more of the contractor's scheduled work day. The number of actual adverse weather delay days shall include days impacted by actual adverse weather (even if adverse weather occurred in previous month), be calculated chronologically from the first to the last day of each month, and be recorded as full days. If the number of actual adverse weather delay days exceeds the number of days anticipated in paragraph "Anticipated Adverse Weather Delays", above, the Contracting Officer will convert any qualifying delays to calendar days, giving full consideration for equivalent fair weather work days, and issue a modification in accordance with the contract clause entitled "Default (Fixed Price Construction)".

1.13 WORKING HOURS

WORKING HOURS: Working hours shall be between the hours of 7:30 AM and 5:00 PM, Monday through Friday. All work outside of these hours shall be coordinated with the Contracting Officer. No Sunday work will be permitted.

1.14 LIMITS OF WORK AND CONTRACTOR ACCESS

1.14.1 Limits of Work

The limits of work areas as shown on the drawings are necessarily approximate. In case of doubt as to the actual limits of any work area, determination as to the actual limits will be made by the Contracting Officer.

1.14.2 Contractor Access

Contractor access to the work areas shall be restricted to routes shown on the drawings and approved by the Contracting Officer. No heavy material or equipment may be brought to the site until access routes are designated and approved.

1.15 DAMAGE TO WORK (1966 MAR OCE)

The responsibility for damage to any part of the permanent work shall be as set forth in the "Permits and Responsibilities" clause of the Contract Clauses. However, if, in the judgment of the Contracting Officer, any part of the permanent work performed by the Contractor is damaged by flood or earthquake which damage is not due to the failure of the Contractor to take reasonable precautions or to exercise sound engineering and construction practices in the conduct of the work, the Contractor will make the repairs as ordered by the Contracting Officer and full compensation for such repairs will be made at the applicable contract unit or lump sum prices as fixed and established in the contract. If, in the opinion of the Contracting Officer, there are no contract unit or lump sum prices applicable to any part of such work an equitable adjustment pursuant to the "Changes" clauses of the Contract Clauses, will be made as full compensation for the repairs of that part of the permanent work for which there are no applicable contract unit or lump sum prices. Except as herein provided, damage to all work(including temporary construction), utilities, materials, equipment and plant shall be repaired to the satisfaction of the Contracting Officer at the Contractor's expense, regardless of the cause of such damage. (CENAB)

1.16 RECORDING AND PRESERVING ARCHEOLOGICAL FINDS:

1.16.1 General

All items having any apparent archeological interest which are discovered in the course of any construction activities shall be carefully preserved. The Contractor shall leave the archeological find undisturbed and shall immediately report the find to the Contracting Officer so that the proper archeological team may be notified. (CENAB)

1.16.2 Time Extensions for Historical, Archaelogical and Curtural Resources Delays

1.16.2.1 Procedures

This provision specifies the procedures for determination of time extensions for archeological delay in accordance with the Contract Clause entitled DEFAULT (FIXED PRICE CONSTRUCTION). The contract completion time includes 15 days for archeological delays.

1.16.2.2 Delay Evaluations

The above anticipated archeological delay will constitute a base line for archeological delay evaluations. Upon acknowledgment of the Notice to Proceed (NTP) and continuing throughout the contract on a monthly basis, actual archeological delay days will be recorded on a work day basis and compared to the archeological delay scheduled above. The term actual archeological days shall include days impacted by actual archeological delay.

1.16.2.3 Delay Days Calculations

The number of actual archeological delay days shall be calculated chronologically. All archeological delay days must prevent work for 50 percent or more to the Contractor's work day and delay work critical to the timely completion of the project. Once the number of actual archeological delay days anticipated in the schedule above have been incurred, the Contracting Officer will examine any subsequently occurring archeological delay days to determine whether the Contractor is entitled to a work extension. If necessary, the Contracting Officer will issue a modification in accordance with the Contract Clause entitled DEFAULT (FIXED PRICE CONSTRUCTION).

1.16.2.4 Delay Days in Schedule

The Contractor's schedule must reflect the above anticipated archeological delays.

1.17 MAINTENANCE OF EXISTING FLOOD PROTECTION

The Contractor shall maintain the existing level of flood protection at all times or during any operations. "Existing level of flood protection" includes maintaining both the height of existing levees, and positive protection on relief culverts and 24 inch CMP (i.e., flap and/or sluice gates); and sufficient side slopes and embankment width to maintain that height of protection. Stripping and required excavation as shown on the drawings shall not be considered as reducing the existing level of flood protection. The Contractor will be required to stockpile, immediately adjacent to the area, the appropriate materials for reconstructing the levee embankment. In the event of high river stages, the Contracting Officer will evaluate the situation and, if necessary, direct the Contractor to reconstruct the embankment to its original grades. Temporary flap gates may be required at the relief culverts. The Contractor shall submit a contingency plan for Government approval that details proposed temporary and/or emergency flood protection measures.

1.18 ENVIRONMENTAL LITIGATION (1974 NOV OCE)

If the performance of all or any part of the work is suspended, delayed, or interrupted due to an order of a court of competent jurisdiction as a result of environmental litigation, as defined below, the Contracting Officer, at the request of the Contractor, shall determine whether the order is due in any part to the acts or omissions of the Contractor or a Subcontractor at any tier not required by the terms of this contract. If it is determined that the order is not due in any part to acts or omissions of the Contractor or a Subcontractor at any tier other than as required by the terms of this contract, such suspension, delay, or interruption shall be considered as if ordered by the Contracting Officer in the administration of this contract under the terms of the "Suspension of Work"

clause of the Contract Clauses. The period of such suspension, delay or interruption shall be considered unreasonable, and an adjustment shall be made for any increase in the cost of performance of this contract (excluding profit) as provided in that clause, subject to all the provisions thereof.

The term "environmental litigation", as used herein, means a lawsuit alleging that the work will have an adverse effect on the environment or that the Government has not duly considered, either substantively or procedurally, the effect of the work on the environment. (CENAB)

1.19 MEASUREMENT AND PAYMENT

No separate measurement and payment will be made for the work performed in this Section 01050, JOB CONDITIONS, specified herein; and all costs in connection therewith shall be considered a subsidiary obligation of the Contractor, and shall be included in the overall cost of the work.(CENAB)

PART 2 PRODUCTS

NOT APPLICABLE

PART 3 EXECUTION

NOT APPLICABLE

ATTACHMENT

RISK ASSESSMENT CHECKLIST
WYOMING VALLEY GPS SURVEY NETWORK DATA

-- End of Section --

RISK ASSESSMENT FOR
EXCAVATION AND OTHER WORK IN THE VICINITY OF UTILITIES

PROJECT NAME:_____
CONTRACT NUMBER:_____
PROJECT INSTALLATION AND LOCATION:_____
PROPOSED EXCAVATION START DATE:_____

1. ☐ ESTABLISH EXCAVATION DETAILS AND DRAWINGS (check when completed)

2. ☐ PROPOSED EXCAVATION AREA MARKED ("white lining") (check when completed)

3. ☐ CONTACT APPROPRIATE ONE-CALL SERVICE FOR PUBLIC UTILITIES:
MD: Miss Utility 1-800-257-7777 N Y : New York City - Long Island One Call Center 1-800-272-4480
N. VA: Miss Utility 1-800-552-7777 PA: Pennsylvania One-Call System Incorporated 1-800-242-1776
VA: Miss Utility of VA 1-800-552-7001 DC: Miss Utility 1-800-257-7777
ONE-CALL NATIONAL REFERRAL CENTER: 1-888-258-0808

☐ CONTACT INSTALLATION/OWNERS OF ALL PRIVATELY OWNED UTILITIES (NON ONE-CALL MEMBERS)

4. ☐ DATE UTILITIES MARKED AND METHOD OF MARKING
ONE-CALL LOCATORS _____
OTHER LOCAT ORS _____

5. ☐ CONTACT APPROPRIATE DPW REPRESENTATIVES AND COMPLY WITH INSTALLATION PERMIT REQUIREMENTS: _____

6. ☐ UTILITIES IDENTIFIED ON-SITE:
☐ NONE ☐ ELECTRIC ☐ GAS ☐ WATER ☐ TELEPHONE ☐ CATV ☐ SEWER ☐ OTHER _____

7. ☐ LEVEL OF RISK: (Based upon personnel safety and consequences of utility outages.)
☐ SEVERE: Excavation required within the immediate vicinity (<2-ft) of a MARKED utility.
☐ MODERATE: Excav. required outside the immediate vicinity (> 2-ft) of MARKED utility.
☐ MINIMAL: Excavation required in an area with NO utilities.

8. ☐ EXISTING FACILITIES/UTILITIES IN VICINITY:
☐ NON-CRITICAL ☐ MISSION CRITICAL ☐ HIGH-PROFILE ☐ CEREMONIAL
☐ OTHER_____
☐ CONSEQUENCES IF EXISTING UTILITIES ARE DAMAGED/DISRUPTED _____
_____

9. ☐ ENGINEERING CONTROLS REQUIRED:
☐ NONE ☐ HAND EXCAVATE TO LOCATE UTILITY ☐ EXCAVATE WITH DUE CARE
☐ OTHER_____

10. ☐ ADMINISTRATIVE CONTROLS REQUIRED:
☐ Notification of Contracting Officer's Representative, NOTIFIED on: _____
☐ Notification of Installation/DPW Representative, NOTIFIED on:_____

11. ☐ EMERGENCY NOTIFICATION AT INSTALLATION: POC & PHONE NUMBER _____

THE INFORMATION NOTED ABOVE IS ACCURATE AND THE WORK IS READY TO PROCEED
SIGNED and DATE _____CQC MANAGER

12. ☐ ON-SITE GOVERNMENT REP. RECOMMENDATION FOR APPROVAL TO EXCAVATE:
☐ YES ☐ NO SIGNATURE AND DATE: _____
Comments:_____

13. ☐ AREA ENGINEER APPROVAL TO EXCAVATE:
☐ APPROVED ☐ DENIED SIGNATURE AND DATE: _____
Comments:_____

WYOMING VALLEY GPS SURVEY NETWORK DATA

NAME OF STATION: GA 31

☐ RECOVERED ☒ ESTABLISHED DATE: JANUARY, 1997

LOCATION METHOD

☒ GPS ☐ EDM TRAVERSE ☐ TRANSIT TAPE TRAVERSE

1983 NORTH AMERICAN DATUM, NORTH ZONE PENNSYLVANIA STATE COORDINATE SYSTEM (METERS)

NORTHING (Y) = 122951.241
EASTING (X) = 755008.742

1927 NORTH AMERICAN DATUM, NORTH ZONE PENNSYLVANIA STATE COORDINATE SYSTEM (FEET)

NORTHING (Y) = 403343.933
EASTING (X) = 2508473.501

WYOMING VALLEY LEVEE PROJECT COORDINATE SYSTEM

NORTHING (Y) = N/A
EASTING (X) = N/A

MEAN SEA LEVEL ELEVATION NATIONAL GEODETIC DATUM OF 1929

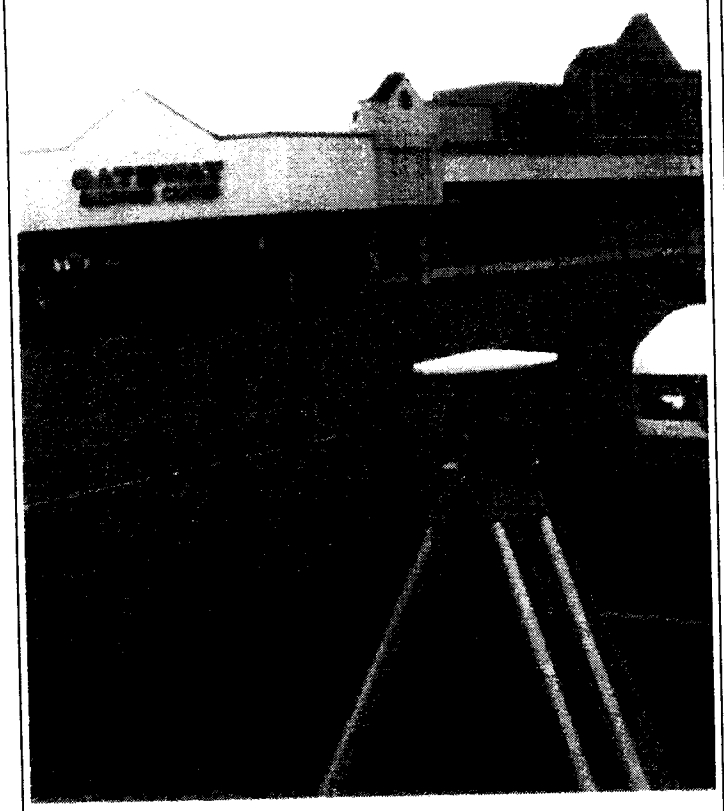
ELEVATION (FEET) = 533.351
ELEVATION (METERS) = 162.566

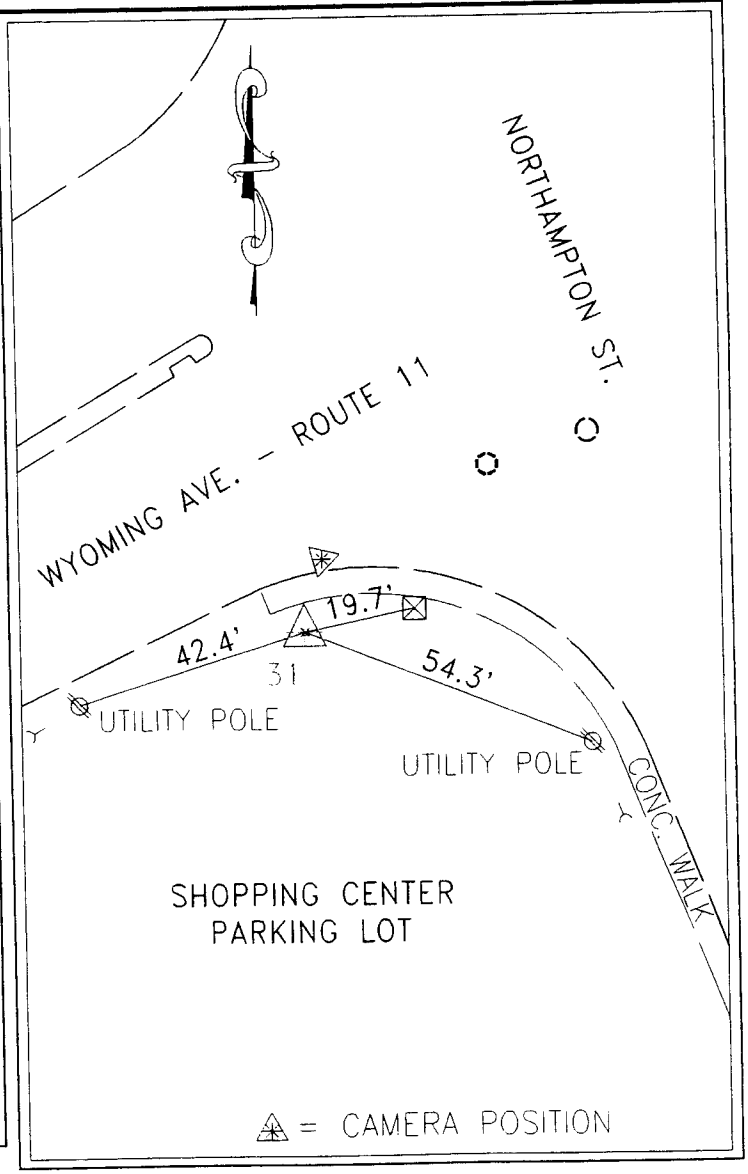
MONUMENT DESCRIPTION AND CONDITION

RE-BAR AND ALUMINUM CAP

TO REACH DESCRIPTION:

IN KINGSTON BORRO AND FROM THE INTERSECTION OF MARKET ST. WITH WYOMING AVE. 0.2 MILES SW ON WYOMING AVE. TO THE INTERSECTION WITH NORTHAMPTON ST. STATION IS AT THE SOUTH CORNER.





SURVEYED BY: **WILLIAM H. GORDON ASSOCIATES, INC.**, 4501 DALY DRIVE, CHANTILLY, VIRGINIA 20151

WYOMING VALLEY GPS SURVEY NETWORK DATA

NAME OF STATION: GA 32

☐ RECOVERED ☒ ESTABLISHED DATE: JANUARY, 1997

LOCATION METHOD

☒ GPS ☐ EDM TRAVERSE ☐ TRANSIT TAPE TRAVERSE

1983 NORTH AMERICAN DATUM, NORTH ZONE PENNSYLVANIA STATE COORDINATE SYSTEM (METERS)

NORTHING (Y) = 122547.708
EASTING (X) = 754540.269

1927 NORTH AMERICAN DATUM, NORTH ZONE PENNSYLVANIA STATE COORDINATE SYSTEM (FEET)

NORTHING (Y) = 402020.014
EASTING (X) = 2506936.525

WYOMING VALLEY LEVEE PROJECT COORDINATE SYSTEM

NORTHING (Y) = N/A
EASTING (X) = N/A

MEAN SEA LEVEL ELEVATION NATIONAL GEODETIC DATUM OF 1929

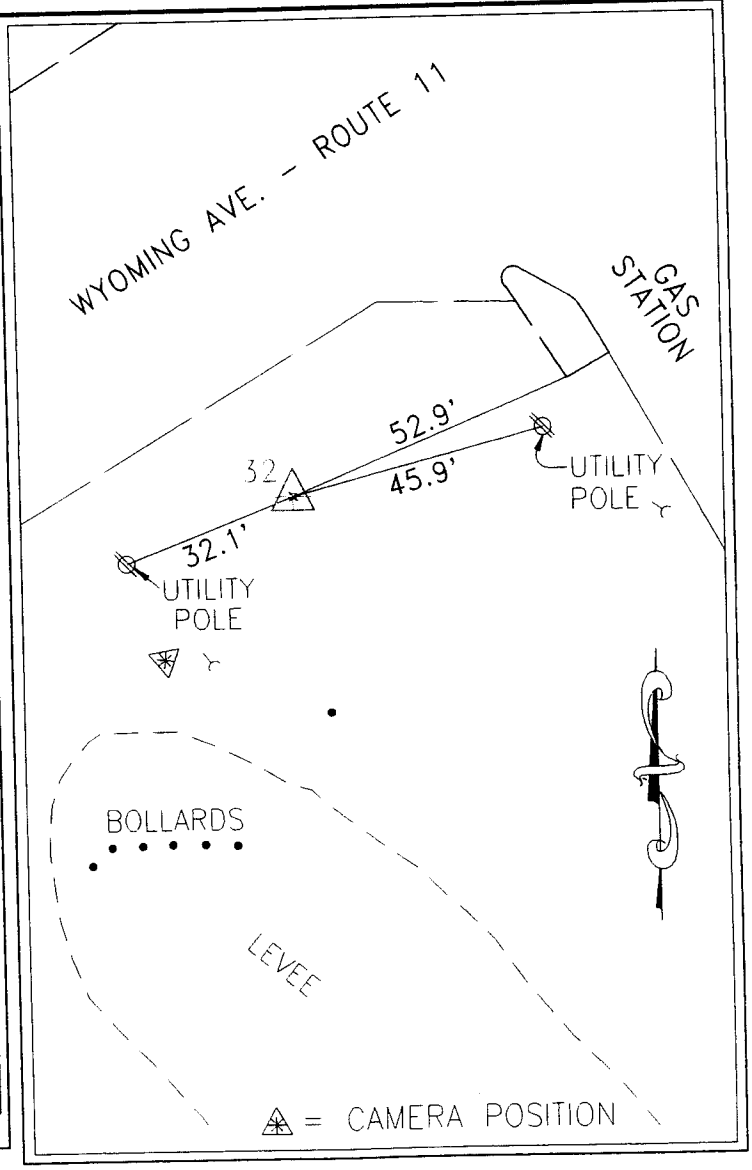
ELEVATION (FEET) = 547.397
ELEVATION (METERS) = 166.847

MONUMENT DESCRIPTION AND CONDITION

CONCRETE WITH BRASS CAP

TO REACH DESCRIPTION:

IN KINGSTON BORRO AND FROM THE INTERSECTION OF MARKET ST. WITH WYOMING AVE. 0.6 MILES SW ON WYOMING AVE. STATION IS AT THE SOUTH SIDE OF ROAD APPROXIMATELY 25 FEET FROM EDGE OF PAVEMENT.



SURVEYED BY: **WILLIAM H. GORDON ASSOCIATES, INC.,** 4501 DALY DRIVE, CHANTILLY, VIRGINIA 20151

WYOMING VALLEY GPS SURVEY NETWORK DATA

NAME OF STATION: GA 34

☐ RECOVERED ☒ ESTABLISHED DATE: JANUARY, 1997

1983 NORTH AMERICAN DATUM, NORTH ZONE
PENNSYLVANIA STATE COORDINATE SYSTEM (METERS)

NORTHING (Y) = 122004.143
EASTING (X) = 755533.621

WYOMING VALLEY LEVEE
PROJECT COORDINATE SYSTEM

NORTHING (Y) = N/A
EASTING (X) = N/A

MONUMENT DESCRIPTION AND CONDITION

CONCRETE WITH BRASS CAP

LOCATION METHOD

☒ GPS ☐ EDM TRAVERSE ☐ TRANSIT TAPE TRAVERSE

1927 NORTH AMERICAN DATUM, NORTH ZONE
PENNSYLVANIA STATE COORDINATE SYSTEM (FEET)

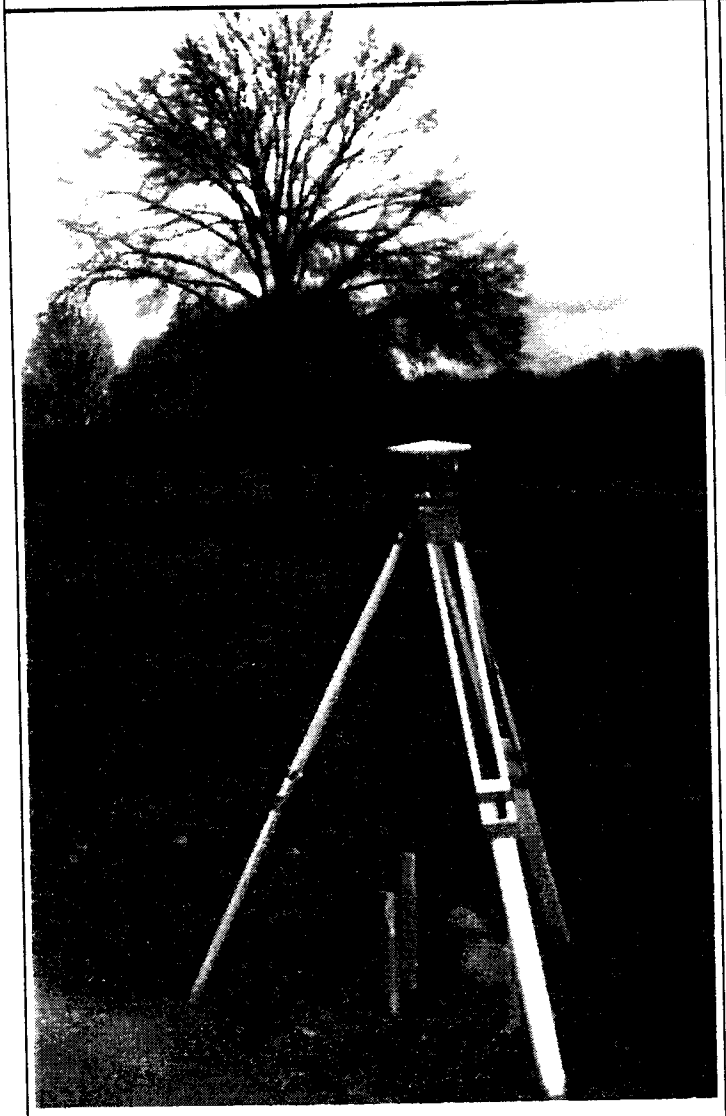
NORTHING (Y) = 400236.676
EASTING (X) = 2510195.532

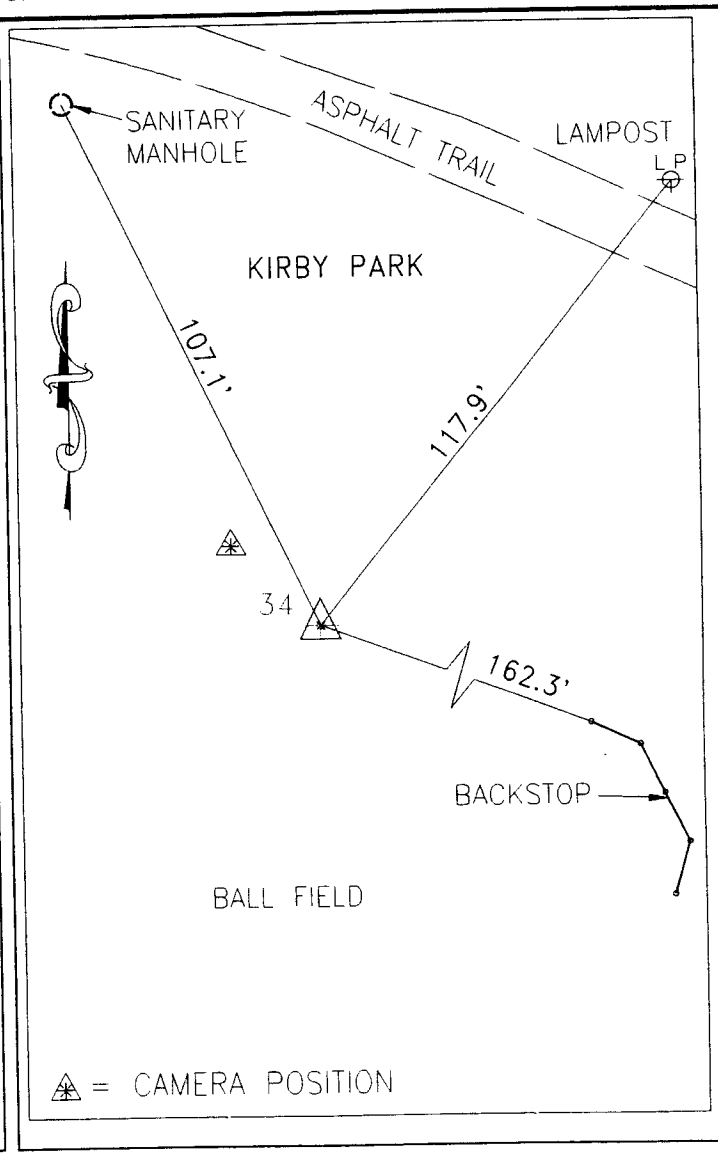
MEAN SEA LEVEL ELEVATION
NATIONAL GEODETIC DATUM OF 1929

ELEVATION (FEET) = 530.479
ELEVATION (METERS) = 161.690

TO REACH DESCRIPTION:

IN KINGSTON BORRO AND FROM THE INTERSECTION OF MARKET ST. WITH WYOMING AVE. 0.2 MILES SW ON WYOMING AVE. LEFT ON NORTHAMPTON 0.6 MILES TO STOP SIGN. RIGHT AT ENTRANCE TO KIRBY PARK TO END OF PARKING LOT. NW ALONG ASPHALT TRAIL. STATION IS ADJACENT TO BASEBALL FIELD.





SURVEYED BY: **WILLIAM H. GORDON ASSOCIATES, INC.,** 4501 DALY DRIVE, CHANTILLY, VIRGINIA 20151

WYOMING VALLEY GPS SURVEY NETWORK DATA

NAME OF STATION: GA 35

☐ RECOVERED ☒ ESTABLISHED DATE: JANUARY, 1997

LOCATION METHOD

☒ GPS ☐ EDM TRAVERSE ☐ TRANSIT TAPE TRAVERSE

1983 NORTH AMERICAN DATUM, NORTH ZONE PENNSYLVANIA STATE COORDINATE SYSTEM (METERS)

NORTHING (Y) = 122306.264
EASTING (X) = 755960.709

1927 NORTH AMERICAN DATUM, NORTH ZONE PENNSYLVANIA STATE COORDINATE SYSTEM (FEET)

NORTHING (Y) = 401227.882
EASTING (X) = 2511596.731

WYOMING VALLEY LEVEE PROJECT COORDINATE SYSTEM

NORTHING (Y) = N/A
EASTING (X) = N/A

MEAN SEA LEVEL ELEVATION NATIONAL GEODETIC DATUM OF 1929

ELEVATION (FEET) = ~~536.123~~ 536.083 5/97
ELEVATION (METERS) = ~~163.411~~

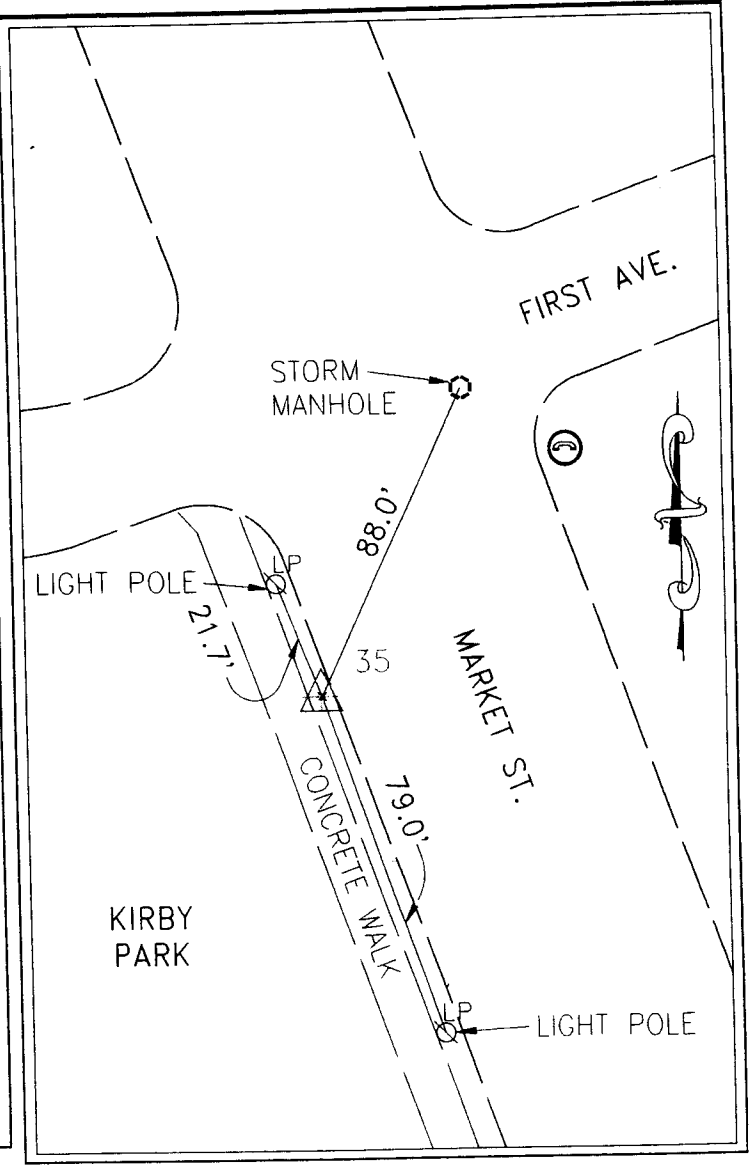
MONUMENT DESCRIPTION AND CONDITION

RE-BAR AND ALUMINUM CAP

TO REACH DESCRIPTION:

IN KINGSTON BORRO AND FROM THE INTERSECTION OF MARKET ST. WITH WYOMING AVE. 0.75 MILES SE ON MARKET ST. STATION IS AT THE SW SIDE OF MARKET ST. APPROXIMATELY 35 FEET FROM THE ENTRANCE TO KIRBY PARK.

PHOTOGRAPH NOT AVAILABLE



SURVEYED BY: **WILLIAM H. GORDON ASSOCIATES, INC.,** 4501 DALY DRIVE, CHANTILLY, VIRGINIA 20151

WYOMING VALLEY GPS SURVEY NETWORK DATA

NAME OF STATION: GA 36

☐ RECOVERED ☒ ESTABLISHED DATE: JANUARY, 1997

1983 NORTH AMERICAN DATUM, NORTH ZONE PENNSYLVANIA STATE COORDINATE SYSTEM (METERS)

NORTHING (Y) = 121982.513
EASTING (X) = 756250.100

WYOMING VALLEY LEVEE PROJECT COORDINATE SYSTEM

NORTHING (Y) = N/A
EASTING (X) = N/A

MONUMENT DESCRIPTION AND CONDITION

LEAD AND TACK IN CONCRETE

LOCATION METHOD

☒ GPS ☐ EDM TRAVERSE ☐ TRANSIT TAPE TRAVERSE

1927 NORTH AMERICAN DATUM, NORTH ZONE PENNSYLVANIA STATE COORDINATE SYSTEM (FEET)

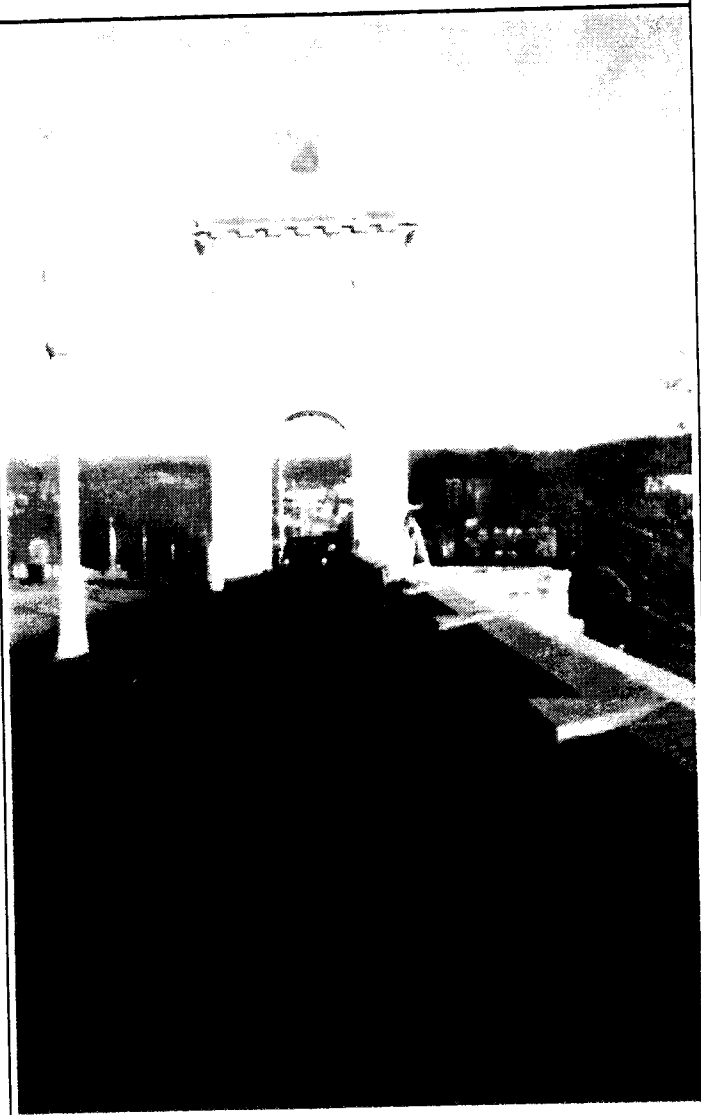
NORTHING (Y) = 400165.714
EASTING (X) = 2512546.170

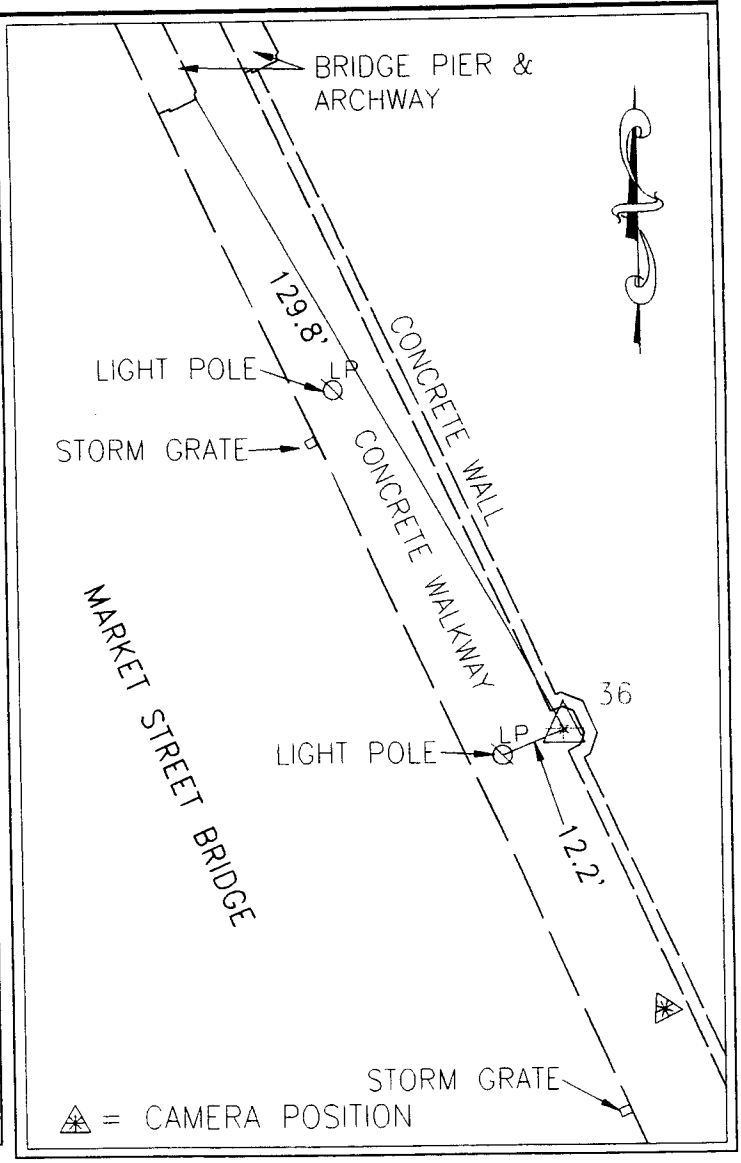
MEAN SEA LEVEL ELEVATION NATIONAL GEODETIC DATUM OF 1929

ELEVATION (FEET) = 562.568
ELEVATION (METERS) = 171.471

TO REACH DESCRIPTION:

IN KINGSTON BORRO AND FROM THE INTERSECTION OF MARKET ST. WITH WYOMING AVE. 1.0 MILES SE ON MARKET ST. STATION IS AT NE SIDE OF MARKET STREET BRIDGE IN SIDEWALK.





SURVEYED BY: **WILLIAM H. GORDON ASSOCIATES, INC.,** 4501 DALY DRIVE, CHANTILLY, VIRGINIA 20151

SECTION 01060

SAFETY

PART 1 GENERAL

1.1 APPLICABLE PUBLICATION

The publications listed below form a part of this specification and are referred to in the text by the basic designation only. All interim changes (changes made between publications of new editions) to the U.S. Army Corps of Engineers Safety and Health Requirements Manual, EM 385-1-1, will be posted on the Headquarters Website. The date that it is posted shall become the official effective date of the change and contracts awarded after this date shall require to comply accordingly. The website location where these changes can be found is under the button entitled "Changes to EM", located at: "http://www.hq.usace.army.mil/soh/hqusace_soh.htm".

U.S. ARMY CORPS OF ENGINEERS:

EM 385-1-1	(3 Sep 1996) U.S. Army Corps of Engineers Safety and Health Requirements Manual

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Safety Supervisor; G AR.

A safety supervisor shall be responsible for overall supervision of accident prevention activities.

Accident Prevention Plan; G AR.

Activity Phase Hazard Analysis Plan; G AR.

The addressing of the activity phase hazard analysis plan for each activity performed in a phase of work.

Outline Report

A report for each past activities review.

OSHA Log

SD-07 Certificates

Language Certification

It is the Contractors responsibility to ensure that all employees understand the basic English language.

A log shall be reported monthly for injuries.

1.3 GENERAL

The U.S. Army Corps of Engineers Safety and Health Requirements Manual, EM 385-1-1, and all subsequent revisions referred to in the Contract Clause ACCIDENT PREVENTION of this contract, are hereby supplemented as follows:

a. The Contractor shall designate an employee responsible for overall supervision of accident prevention activities. Such duties shall include: (1) assuring applicable safety requirements are (a) communicated to the workers in a language they understand (reference EM 385-1-1, September 1996, 01.A.04). It is the Contractor's responsibility to ascertain if there are workers on the job who do not speak and/or understand the English language, if such workers are employed by the prime contractor or subcontractors, at any tier, it is the prime contractor's responsibility to insure that all safety programs, signs, and tool box meetings are communicated to the workers in a language they understand, and that a bilingual employee is on site at all time. If the contractor contends that interpreters and/or bilingual signs are not required, language certification must be provided which verifies that all workers (whose native tongue is other than English) have a command of the English language sufficient to understand all direction, training and safety requirements, whether written or oral, and (b) incorporated in work methods, and (2) inspecting the work to ensure that safety measures and instructions are actually applied. The proposed safety supervisor name and qualifications shall be submitted in writing for approval to the Contracting Officer's Representative. This individual must have prior experience as a safety engineer or be able to demonstrate his/her familiarity and understanding of the safety requirements over a prescribed trial period. The safety engineer shall have the authority to act on behalf of the Contractor's general management to take whatever action is necessary to assure compliance with safety requirements. The safety supervisor is required to be on the site when work is being performed.

b. Prior to commencement of any work at a job site, a preconstruction safety meeting shall be held between the Contractor and the Corps of Engineers Area/Resident Engineer to discuss the Contractor's safety program and in particular to review the following submittals:

(1) Contracts Accident Prevention Plan: An acceptable accident prevention plan, written by the prime Contractor for the specific work and implementing in detail the pertinent requirements of EM 385-1-1, shall be submitted for Government approval.

(2) Activity Phase Hazard Analysis Plan: Prior to beginning each major phase of work, an activity hazard analysis (phase plan) shall be prepared by the Contractor for that phase of work and submitted to the Contracting Officer's Representative for approval. A phase is defined as an operation involving a type of work presenting hazards not experienced in previous operations or where a new subcontractor or work crew is to perform work. The analysis shall address the hazards for each activity performed in the phase and shall present the procedures and safeguards necessary to

eliminate the hazards or reduce the risk to an acceptable level.

c. Subsequent jobsite safety meetings shall be held as follows:

(1) A safety meeting shall be held at least once a month for all supervisors on the project to review past activities, to plan ahead for new or changed operations and to establish safe working procedures to anticipated hazards. An outline report of each monthly meeting shall be submitted to the Contracting Officer's Representative.

(2) At least one safety meeting shall be conducted weekly, or whenever new crews begin work, by the appropriate field supervisors or foremen for all workers. An outline report of the meeting giving date, time, attendance, subjects discussed and who conducted it shall be maintained and copies furnished the designated authority on request. A copy of the outline report shall be included in the Daily CQC report as well.

1.4 ACCIDENTS

Chargeable accidents are to be investigated by both Contractor personnel and the Contracting Officer.

1.4.1 Accident Reporting, ENG FORM 3394

Section 1, Paragraph 01.D, OF EM 385-1-1 and the Contract Clause entitled ACCIDENT PREVENTION are amended as follows: The prime Contractor shall report on Eng Form 3394, supplied by the Contracting Officer, all injuries to his employees or subcontractors that result in lost time and all damage to property and/or equipment in excess of $2,000 per incident. Verbal notification of such accident shall be made to the Contracting Officer within 24 hours. A written report on the above noted form shall be submitted to the Contracting Officer within 72 hours following such accidents. The written report shall include the following:

a. A description of the circumstances leading up to the accident, the cause of the accident, and corrective measures taken to prevent recurrence.

b. A description of the injury and name and location of the medical facility giving examination and treatment.

c. A statement as to whether or not the employee was permitted to return to work after examination and treatment by the doctor, and if not, an estimate or statement of the number of days lost from work. If there have been days lost from work, state whether or not the employee has been re-examined and declared fit to resume work as of the date of the report.

1.4.1.1 Accident Notification

The Contractor shall notify the Contracting Officer of any and all accidents, where an injury, property damage, or environmental damage occured, within 24 hours of the accident.

1.4.2 OSHA Requirements

1.4.2.1 OSHA Log

A copy of the Contractor's OSHA Log of Injuries shall be forwarded monthly to the Contracting Officer.

1.4.2.2 OSHA Inspections

Contractors shall immediately notify the Contracting Officer when an OSHA Compliance official (Federal or State representative) presents his/her credentials and informs the Contractor that the workplace will be inspected for OSHA compliance. Contractors shall also notify the Contracting Officer upon determination that an exit interview will take place upon completion of the OSHA inspection. (NABSA OCT 05, 1976)

1.5 GOVERNMENT APPROVAL

Submittals shall be in accordance with Section 01330 SUBMITTAL PROCEDURES. All required submittals of items specified in this section shall be for information only, except for those items including, but not limited to, the following which shall be submitted for Government approval:

a. Written designation of safety representative.

b. Written project specific accident prevention plan.

c. Written activity phase hazard analysis plan.

PART 2 PRODUCT

NOT APPLICABLE

PART 3 EXECUTION

NOT APPLICABLE

-- End of Section --

SECTION 01200

WARRANTY REQUIREMENT

PART 1 GENERAL

1.1 WARRANTY OF CONSTRUCTION

The Contractor shall warranty all materials and workmanship in accordance with Contract Clause (FAR 52.246-21), "WARRANTY OF CONSTRUCTION"

1.2 MANUFACTURER'S WARRANTY:

The Contractor shall provide manufacturer's warranties, when available, on all equipment for one year starting from the day of facility acceptance by the Government. Any warranty offered by the manufacturer for periods greater than one year or required by other sections of the specifications shall also be provided.

1.3 WARRANTY PAYMENT

Warranty work is a subsidiary portion of the contract work, and has a value to the Government of $10,000. The Contractor wil1 assign a value of that amount in the breakdown for progress payments mentioned in the Contract Clause (FAR 52.232-5) "Payments Under Fixed-Price Construction". If the Contractor fails to respond to warranty items as provided in paragraph CONTRACTOR'S RESPONSE TO WARRANTY SERVICE REQUIREMENTS below, the Government may elect to acquire warranty repairs through other sources and, if so, shall backcharge the Contractor for the cost of such repairs. Such backcharges shall be accomplished under the Contract Clause (FAR 52.243-4) "CHANGES" of the contract through a credit modification(s).

1.4 PERFORMANCE BOND:

The Contractor's Performance Bond will remain effective throughout the construction warranty period and warranty extensions.

1.4.1 Failure to Commence

In the event the Contractor or his designated representative(s) fail to commence and diligently pursue any work required under this clause, and in a manner pursuant to the requirements thereof, the Contracting Officer shall have the right to demand that said work be performed under the Performance Bond by making written notice on the surety. If the surety fails or refuses to perform the obligation it assumed under the Performance Bond, the Contracting Officer shall have the work performed by others, and after completion of the work, may demand reimbursement of any or all expenses incurred by the Government while performing the work, including, but not limited to administrative expenses.

1.5 PRE-WARRANTY CONFERENCE:

Prior to contract completion and at a time designated by the Contracting Officer, the Contractor shall meet with the Contracting Officer to develop a mutual understanding with respect to the requirements of this specification. Communication procedures for Contractor notification of

warranty defects, priorities with respect to the type of defect, reasonable time required for Contractor response, and other details deemed necessary by the Contracting Officer for the execution of the construction warranty shall be reviewed at this meeting. The Contractor shall provide names, addresses, and telephone numbers of all subcontractors, equipment suppliers, or manufacturers with specific designation of their area of responsibilities if they are to be contacted directly on warranty corrections. This point of contact will be located within the local service area of the warranted construction, will be continuously available, and will be responsive to Government inquiry on warranty work action and status. Minutes of the meeting will be prepared by the Government and signed by both the Contractor and the Contracting Officer. The minutes shall become part of the contract file.

1.6 CONTRACTOR'S RESPONSE TO WARRANTY SERVICE REQUIREMENTS.

1.6.1 Notification to Warranty Service Requirements

Following oral or written notification by authorized representative of the Luzerne County Flood Protection Authority, the Contractor shall respond to warranty service requirements within 5 work days and work continuously to completion or relief.

1.6.2 Availability of Required Parts

Should parts be required to complete the work and the parts are not immediately available the Contractor shall have a maximum of 12 hours after arrival at the job site to provide authorized representative of the county with firm written plan for emergency alternatives and temporary repairs for Government participation with the Contractor to provide emergency relief until the required parts are available on site for the Contractor to perform permanent warranty repair. The Contractors plan shall include a firm date and time that the required parts shall be available on site to complete the permanent warranty repair.

PART 2 PRODUCTS - NOT APPLICABLE

PART 3 EXECUTION - NOT APPLICABLE

-- End of Section --

SECTION 01270

MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.1 SCOPE

This section covers the methods and procedures which will be used to measure the Contractor's work and to effect payment.

1.2 GENERAL

The general outline of the principal features of each item as listed does not in any way limit the responsibility of the Contractor for making a thorough investigation of the drawings and specifications to determine the scope of work under the entire contract. Payment to the Contractor of the amounts based on the quantities of work as measured in accordance with the specified methods of measurement and the prices stipulated in the accepted proposal will constitute complete compensation for all work shown on the drawings, provided in the specifications or other Contract Documents and all costs of accepting the general risks, liabilities and obligations expressed or implied. Payment under all items shall include, but not necessarily be limited to, compensation for furnishing all supervision, labor, equipment, materials and services (including overhead and profit), as well as performing all work required to accomplish and complete the work specified under each item and other work required.

1.3 LUMP SUM PAYMENT ITEMS

1.3.1

The quantities under lump sum items will not be measured except for the purpose of determining reasonable interim payments.

1.3.2

Interim payments will be made in accordance with the estimated value of work done as determined by the Contracting Officer or as specified in this section, and in accordance with CONTRACT CLAUSE for PAYMENTS.

1.4 PAYMENT ITEMS

1.4.1 PERFORMANCE AND PAYMENT BONDS REIMBURSEMENT (ITEM NO.0001)

See SECTION 01000 - ADMINISTRATIVE REQUIREMENTS, PARAGRAPH - PERFORMANCE AND PAYMENT BOND REIMBURSEMENT: (MAY 1983).

1.4.2 KIRBY PARK RELIEF CULVERT MODIFICATIONS (ITEM NO.0002)

No separate measurement shall be made for the modifications to the Kirby Park Relief Culvert. Payment for the relief culvert modifications shall be made at the contract lump sum price for the relief culvert modifications, complete. The lump sum price shall include care and diversion of water

during construction, sluice gates, gate frames, stems and stem guides, operators, removal, modification and replacement of flap gates, removal of trash rack, concrete, reinforcing steel, formwork, dowels, anchors, sealant, joint material, concrete finishing, installation of 48 inch RCP, grout, miscellaneous metals, locks, railings, excavation, 2A coarse aggregate, Erosion and Sediment Control, clearing and grubbing, construction and restoration of access roads, and full compensation for all plant, labor, materials, equipment, and all incidental items necessary to complete the work as shown on the drawings. Costs for full compliance with confined space entry shall also be included. Also included in the lump sum price shall be the removal of all debris, sediment and materials within the existing relief culvert and any required cleaning and preparation of the existing concrete in contact with new concrete. Any required excavation or removal and replacement of the existing embankment shall be included in the lump sum price. Construction shall be in accordance with applicable portions of the Specifications and the drawings. Payment shall be made at the lump sum price for Item No. 0002, "Kirby Park Relief Culvert Modifications" of the Unit Price Schedule.

1.4.3 BEET FIELD RELIEF CULVERT MODIFICATIONS (ITEM NO. 0003)

No separate measurement shall be made for the modifications to the Beet Field Relief Culvert. Payment for the relief culvert modifications shall be made at the contract lump sum price for the relief culvert modifications, complete. The lump sum price shall include care and diversion of water during construction, sluice gates, gate frames, stems and stem guides, operators, concrete, reinforcing steel, formwork, dowels, anchors, sealant, joint material, concrete finishing, miscellaneous metals, locks, railings, excavation, 2A coarse aggregate, resealing of existing culvert joints, Erosion and Sediment Control, clearing and grubbing, construction and restoration of access roads, and full compensation for all plant, labor, materials, equipment, and all incidental items necessary to complete the work as shown on the drawings. Costs for full compliance with confined space entry shall also be included. Also included in the lump sum price shall be the removal of all debris, sediment and materials within the inlet structure and pipes of the existing relief culvert and any required cleaning and preparation of the existing concrete in contact with new concrete. Any required excavation or removal and replacement of the existing embankment shall be included in the lump sum price. Construction shall be in accordance with applicable portions of the Specifications and the drawings. Payment shall be made at the lump sum price for Item No. 0003, "Beet Field Relief Culvert Modifications" of the Unit Price Schedule.

1.4.4 BEET FIELD RELIEF CULVERT FLAP GATE MODIFICATIONS - ITEM NO. 0004

No separate measurement shall be made for the modifications to the Beet Field Relief Culvert Flap Gates. Payment for the flap gate modifications shall be made at the contract lump sum price for the flap gate modifications, complete. The lump sum price shall include care and diversion of water during construction, opening the gates, cleaning and preparation of the gates for painting, painting the gates, adjusting the gates to ensure a tight seal, and full compensation for all plant, labor, materials, equipment, and all incidental items necessary to complete the work as shown on the drawings. Also included in the lump sum price shall be the removal of all debris, sediment and materials within the existing outlet structure of the relief culvert. Construction shall be in accordance with applicable portions of the Specifications and the drawings. Payment shall be made at the lump sum price for Item No. 0004, "Beet Field Relief Culvert Flap Gate Modifications" of the Unit Price Schedule.

1.4.5 KIRBY PARK 24-INCH STORM LINE MODIFICATIONS - ITEM NO. 0005 (OPTION)

No separate measurement shall be made for the modifications to the Kirby Park 24-inch storm line. Payment for the 24-inch storm line modifications shall be made at the contract lump sum price for the 24-inch storm line modifications, complete. The lump sum price shall include care and diversion of water during construction, removal and replacement of sluice and flap gates, sliplining the 24-inch storm line under the levee embankment, concrete, reinforcing steel, formwork, dowels, anchors, sealant, joint material, concrete finishing, precast manholes, miscellaneous metals, locks, railings, excavation and backfill, Erosion and Sediment Control, clearing and grubbing, and full compensation for all plant, labor, materials, equipment, and all incidental items necessary to complete the work as shown on the drawings. Costs for full compliance with confined space entry shall also be included. Also included in the lump sum price shall be all work associated with the grouting and replacement of the existing 12-inch drain pipe at the relief culvert apron, including new 18-inch diameter drain pipe and end section, removal of existing riprap and bedding, placement of new riprap and bedding and modifications to concrete curb. Any required excavation or removal and replacement of the existing embankment shall be included in the lump sum price. Construction shall be in accordance with applicable portions of the Specifications and the drawings. Payment shall be made at the lump sum price for Item No. 0005, "Kirby Park 24-inch Storm Line Modifications" of the Unit Price Schedule.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

-- End of Section --

SECTION 01330

SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 SUBMITTAL IDENTIFICATION

Submittals required are identified by SD numbers and titles as follows:

SD-01 Preconstruction Submittals

SD-02 Shop Drawings

SD-03 Product Data

SD-04 Samples

SD-05 Design Data

SD-06 Test Reports

SD-07 Certificates

SD-08 Manufacturer's Instructions

SD-10 Operation and Maintenance Data

SD-11 Closeout Submittals

1.2 SUBMITTAL CLASSIFICATION

Submittals are classified as follows:

1.2.1 Government Approved

Government approval is required for extensions of design, critical materials, deviations, equipment whose compatibility with the entire system must be checked, and other items as designated by the Contracting Officer. Within the terms of the Contract Clause entitled "Specifications and Drawings for Construction," they are considered to be "shop drawings."

1.2.2 Information Only

All submittals not requiring Government approval will be for information only. They are not considered to be "shop drawings" within the terms of the Contract Clause referred to above. Submittal Register ENG FORM 4288, column labeled "Reviewer", this column is blank and is understood that the reviewer is "AR" (Area Office).

1.3 APPROVED SUBMITTALS

The Contracting Officer's approval of submittals shall not be construed as a complete check, but will indicate only that the general method of construction, materials, detailing and other information are satisfactory. Approval will not relieve the Contractor of the responsibility for any

error which may exist, as the Contractor under the Contractor Quality Control (CQC) requirements of this contract is responsible for dimensions, the design of adequate connections and details, and the satisfactory construction of all work. After submittals have been approved by the Contracting Officer, no resubmittal for the purpose of substituting materials or equipment will be considered unless accompanied by an explanation of why a substitution is necessary.

1.4 DISAPPROVED SUBMITTALS

The Contractor shall make all corrections required by the Contracting Officer and promptly furnish a corrected submittal in the form and number of copies specified for the initial submittal. If the Contractor considers any correction indicated on the submittals to constitute a change to the contract, a notice in accordance with the Contract Clause "Changes" shall be given promptly to the Contracting Officer.

1.5 WITHHOLDING OF PAYMENT

Payment for materials incorporated in the work will not be made if required approvals have not been obtained.

PART 2 PRODUCTS (Not used)

PART 3 EXECUTION

3.1 GENERAL

The Contractor shall make submittals as required by the specifications. The Contracting Officer may request submittals in addition to those specified when deemed necessary to adequately describe the work covered in the respective sections. Units of weights and measures used on all submittals shall be the same as those used in the contract drawings. Each submittal shall be complete and in sufficient detail to allow ready determination of compliance with contract requirements. Prior to submittal, all items shall be checked and approved by the Contractor's Quality Control (CQC) System Manager and each item shall be stamped, signed, and dated by the CQC System Manager indicating action taken. Proposed deviations from the contract requirements shall be clearly identified. Submittals shall include items such as: Contractor's, manufacturer's, or fabricator's drawings; descriptive literature including (but not limited to) catalog cuts, diagrams, operating charts or curves; test reports; test cylinders; samples; O&M manuals (including parts list); certifications; warranties; and other such required submittals. Submittals requiring Government approval shall be scheduled and made prior to the acquisition of the material or equipment covered thereby. Samples remaining upon completion of the work shall be picked up and disposed of in accordance with manufacturer's Material Safety Data Sheets (MSDS) and in compliance with existing laws and regulations.

3.2 SUBMITTAL REGISTER

At the end of this section is one set of ENG Form 4288 listing items of equipment and materials for which submittals are required by the specifications; this list may not be all inclusive and additional submittals may be required. The Contractor will also be given the submittal register files, containing the computerized ENG Form 4288 and instructions on the use of the files. These submittal register files will be furnished on a separate diskette. Columns "c" through "f" have been

completed by the Government; the Contractor shall complete columns "a" and "g" through "i" and submit the forms (hard copy plus associated electronic file) to the Contracting Officer for approval within 30 calendar days after Notice to Proceed. The Contractor shall keep this diskette up-to-date and shall submit it to the Government together with the monthly payment request. The approved submittal register will become the scheduling document and will be used to control submittals throughout the life of the contract. The submittal register and the progress schedules shall be coordinated.

3.3 SCHEDULING

Submittals covering component items forming a system or items that are interrelated shall be scheduled to be coordinated and submitted concurrently. Certifications to be submitted with the pertinent drawings shall be so scheduled. Adequate time (a minimum of 30 calendar days exclusive of mailing time) shall be allowed and shown on the register for review and approval. No delay damages or time extensions will be allowed for time lost in late submittals.

3.4 TRANSMITTAL FORM (ENG FORM 4025)

Submittals covering component items forming a system or items that are interrelated shall be scheduled to be coordinated and submitted concurrently. Certifications to be submitted with the pertinent drawings shall be so scheduled. Adequate time (a minimum of 30 calendar days exclusive of mailing time) shall be allowed and shown on the register for review and approval. No delay damages or time extensions will be allowed for time lost in late submittals.

3.5 SUBMITTAL PROCEDURE

Six (6) copies of submittals shall be made as follows:

3.5.1 Procedures

In the signature block provided on ENG Form 4025 the Contractor certifies that each item has been reviewed in detail and is correct and is in strict conformance with the contract drawings and specifications unless noted otherwise. The accuracy and completeness of submittals is the responsibility of the Contractor. Any costs due to resubmittal of documents caused by inaccuracy, lack of coordination, and/or checking shall be the responsibility of the Contractor. This shall include the handling and review time on the part of the Government. Each variation from the contract specifications and drawings shall be noted on the form; and, attached to the form, the Contractor shall set forth, in writing, the reason for and description of such variations. If these requirements are not met, the submittal may be returned for corrective action.

3.5.2 Responsibility

The Contractor is responsible for the total management of his work. The quantities, adequacy and accuracy of information contained in the submittals are the responsibility of the Contractor. Approval actions taken by the Government will not in any way relieve the Contractor of his quality control requirements.

3.5.3 Additional Requirements

The above is in addition to the requirements set forth in Contract Clause entitled "Specifications and Drawings for Construction". (ER 415-1-10)

3.5.4 Deviations

For submittals which include proposed deviations requested by the Contractor, the column "variation" of ENG Form 4025 shall be checked. The Contractor shall set forth in writing the reason for any deviations and annotate such deviations on the submittal. The Government reserves the right to rescind inadvertent approval of submittals containing unnoted deviations.

3.6 CONTROL OF SUBMITTALS

The Contractor shall carefully control his procurement operations to ensure that each individual submittal is made on or before the Contractor scheduled submittal date shown on the approved "Submittal Register."

3.7 GOVERNMENT APPROVED SUBMITTALS

Upon completion of review of submittals requiring Government approval, the submittals will be identified as having received approval by being so stamped and dated. Four (4) copies of the submittal will be retained by the Contracting Officer and two (2) copies of the submittal will be returned to the Contractor.

3.8 INFORMATION ONLY SUBMITTALS

Normally submittals for information only will not be returned. Approval of the Contracting Officer is not required on information only submittals. The Government reserves the right to require the Contractor to resubmit any item found not to comply with the contract. This does not relieve the Contractor from the obligation to furnish material conforming to the plans and specifications; will not prevent the Contracting Officer from requiring removal and replacement of nonconforming material incorporated in the work; and does not relieve the Contractor of the requirement to furnish samples for testing by the Government laboratory or for check testing by the Government in those instances where the technical specifications so prescribe.

3.9 STAMPS

Stamps used by the Contractor on the submittal data to certify that the submittal meets contract requirements shall be similar to the following:

CONTRACTOR

(Firm Name)

_____ Approved

_____ Approved with corrections as noted on submittal data and/or attached sheets(s).

SIGNATURE: _____

TITLE: _____

DATE: _____

3.10 CERTIFICATES OF COMPLIANCE: (MAY 1969)

Any Certificate required for demonstrating proof of compliance of materials with specification requirements shall be executed in four (4) copies. Each certificate shall be signed by an official authorized to certify in behalf on the manufacturing company and shall contain the name and address of the Contractor, the project name and location, and the quantity and date or dates of shipment or delivery to which the certificates apply. Copies of laboratory test reports submitted with certificates shall contain the name and address of the testing laboratory and the date or dates of the tests to which the report applies. Certification shall not be construed as relieving the Contractor from furnishing satisfactory material, if, after tests are performed on selected samples, the material is found not to meet the specific requirements. (CENAB)

-- End of Section --

SUBMITTAL REGISTER

CONTRACT NO.

TITLE AND LOCATION
KIRBY/BEET FIELD RELIEF CULVERT

CONTRACTOR

ACTIVITY NO	TRANSMITTAL NO	SPEC SECT	DESCRIPTION ITEM SUBMITTED	PARAGRAPH #	CLASSIFICATION	GOVT OR A/E REVWR	CONTRACTOR: SCHEDULE DATES			CONTRACTOR ACTION			APPROVING AUTHORITY						REMARKS
							SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	ACTION CODE	DATE OF ACTION	DATE FWD TO APPR AUTH/ DATE RCD FROM CONTR	DATE FWD TO OTHER REVIEWER	DATE RCD FROM OTH REVIEWER	ACTION CODE	DATE OF ACTION	MAILED TO CONTR/ DATE RCD FRM APPR AUTH	
(a)	(b)	(c)	(d)	(e)	(f)		(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
		01000	SD-01 Preconstruction Submittals															
			Title Evidence															
			Invoice Copies															
			Payment Evidence															
			Photographs	1.11														
			SD-03 Product Data															
			Cost or Pricing Data	1.5														
			Equipment Data	1.6														
			SD-05 Design Data															
			Progress Schedule	1.2	G	AR												
			SD-10 Operation and Maintenance															
			Data															
			O and M Data	1.7														
		01050	SD-01 Preconstruction Submittals															
			Shut Down Utility Services	1.4.2	G	AR												
			Advance Notice	1.4.3														
			Checklist	1.4.4	G	AR												
			Contingency Plan	1.17	G	AR												
			SD-05 Design Data															
			Survey Data	1.1.3	G	AR												
		01060	SD-01 Preconstruction Submittals															
			Safety Supervisor	1.3	G	AR												
			Accident Prevention Plan		G	AR												
			Activity Phase Hazard Analysis	1.3	G	AR												
			Plan															
			Outline Report															

SUBMITTAL REGISTER

CONTRACT NO.

TITLE AND LOCATION
KIRBY/BEET FIELD RELIEF CULVERT

CONTRACTOR

ACTIVITY NO	TRANSMITTAL NO	SPEC SECT	DESCRIPTION ITEM SUBMITTED	PARAGRAPH #	CLASSIFICATION	GOVT OR A/E REVWR	CONTRACTOR: SCHEDULE DATES			CONTRACTOR ACTION		DATE FWD TO APPR AUTH/ DATE RCD FROM CONTR	APPROVING AUTHORITY				MAILED TO CONTR/ DATE RCD FRM APPR AUTH	REMARKS
							SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	ACTION CODE	DATE OF ACTION		DATE FWD TO OTHER REVIEWER	DATE RCD FROM OTH REVIEWER	ACTION CODE	DATE OF ACTION		
(a)	(b)	(c)	(d)	(e)	(f)		(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
		01060	OSHA Log															
			SD-07 Certificates															
			Language Certification	1.3														
		01356	SD-07 Certificates															
			Mill Certificate or Affidavit	2.1.3														
		01451	SD-01 Preconstruction Submittals															
			CQC Plan	3.2	G	AR												
			Phase Notification															
			Request		G	AR												
			CQC Mgr Qualification		G	AR												
			SD-05 Design Data															
			Notification of Changes	3.2.4														
			Punchlist	3.8.1														
			Minutes	3.3														
			SD-06 Test Reports															
			Tests	3.7.1														
			Documentation	3.9														
			Tests Performed	3.7.1														
			QC Records		G	AR												
		01510	SD-02 Shop Drawings															
			Haul and Access Routes	1.6.1	G	AR												
		01561	SD-01 Preconstruction Submittals															
			Facility Plan	1.9.4	G	AR												
			Temporary Plan	1.9.5	G	AR												
		01720	SD-11 Closeout Submittals															
			Progress Prints		G	AR												

SUBMITTAL REGISTER

CONTRACT NO.

TITLE AND LOCATION
KIRBY/BEET FIELD RELIEF CULVERT

CONTRACTOR

ACTIVITY NO	TRANSMITTAL NO	SPEC SECT	DESCRIPTION ITEM SUBMITTED	PARAGRAPH #	CLASSIFICATION	GOVT OR A/E REVWR	CONTRACTOR: SCHEDULE DATES			CONTRACTOR ACTION			APPROVING AUTHORITY					MAILED TO CONTR/ DATE RCD FRM APPR AUTH	REMARKS
							SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	ACTION CODE	DATE OF ACTION	DATE FWD TO APPR AUTH/ DATE RCD FROM CONTR	DATE FWD TO OTHER REVIEWER	DATE RCD FROM OTH REVIEWER	ACTION CODE	DATE OF ACTION		
(a)	(b)	(c)	(d)	(e)	(f)		(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
		01720	Final Requirements	1.6	G	AR												
			CADD Files															
		02231	SD-03 Product Data															
			Materials Other Than Salable															
			Timber															
		02542	SD-01 Preconstruction Submittals															
			Product Requirement		G	AR												
			Mamifacturer/Installer		G	AR												
			Qualification Requirements;															
			Bypass Plan;	3.1.3	G	AR												
			SD-04 Samples															
			Samples		G	AR												
			SD-05 Design Data															
			Structural Calculations		G	ED												
			SD-06 Test Reports															
			Test Reports		G	AR												
			SD-07 Certificates															
			Quality Management System		G	AR												
		02921A	SD-03 Product Data															
			Equipment	3.1.3														
			Surface Erosion Control Material	2.6														
			Chemical Treatment Material	1.4.3														
			Delivery	1.4.1														
			Finished Grade and Topsoil	3.2.1														
			Topsoil	2.2														
			Quantity Check	3.5														

SUBMITTAL REGISTER

CONTRACT NO.

TITLE AND LOCATION
KIRBY/BEET FIELD RELIEF CULVERT

CONTRACTOR

ACTIVITY NO	TRANSMITTAL NO	SPEC SECT	DESCRIPTION ITEM SUBMITTED	PARAGRAPH #	CLASSIFICATION	GOVT OR A/E REVWR	CONTRACTOR: SCHEDULE DATES			CONTRACTOR ACTION			APPROVING AUTHORITY						
							SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	ACTION CODE	DATE OF ACTION	DATE FWD TO APPR AUTH/ DATE RCD FROM CONTR	DATE FWD TO OTHER REVIEWER	DATE RCD FROM OTH REVIEWER	ACTION CODE	DATE OF ACTION	MAILED TO CONTR/ DATE RCD FRM APPR AUTH	REMARKS
(a)	(b)	(c)	(d)	(e)	(f)		(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
		02921A	Seed Establishment Period	3.8														
			Maintenance Record	3.8.3.4														
			SD-04 Samples															
			Delivered Topsoil	1.4.1.1														
			Soil Amendments	2.3														
			Mulch	2.4														
			SD-06 Test Reports															
			Equipment Calibration	3.1.3														
			Soil Test	3.1.4														
			SD-07 Certificates															
			Seed	2.1	G	AR												
			Topsoil	2.2	G	AR												
			pH Adjuster	2.3.1	G	AR												
			Fertilizer	2.3.2	G	AR												
			Organic Material	2.3.4	G	AR												
			Soil Conditioner	2.3.5	G	AR												
			Mulch	2.4	G	AR												
		02982N	SD-03 Product Data															
			Joint sealant	2.1.1	G	ED												
			SD-04 Samples															
			Separating tape	2.1.3.2														
			backer rod	2.1.3.1														
			Joint sealant	2.1.1														
			SD-06 Test Reports															
			Joint sealant	2.1.1														
			SD-07 Certificates															

SUBMITTAL REGISTER

CONTRACT NO.

TITLE AND LOCATION
KIRBY/BEET FIELD RELIEF CULVERT

CONTRACTOR

ACTIVITY NO	TRANSMITTAL NO	SPEC SECT	DESCRIPTION ITEM SUBMITTED	PARAGRAPH #	CLASSIFICATION	GOVT OR A/E REVWR	CONTRACTOR: SCHEDULE DATES			CONTRACTOR ACTION			APPROVING AUTHORITY					MAILED TO CONTR/ DATE RCD FRM APPR AUTH	REMARKS
							SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	ACTION CODE	DATE OF ACTION	DATE FWD TO APPR AUTH/ DATE RCD FROM CONTR	DATE FWD TO OTHER REVIEWER	DATE RCD FROM OTH REVIEWER	ACTION CODE	DATE OF ACTION		
(a)	(b)	(c)	(d)	(e)	(f)		(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
		02982N	Equipment list	1.6														
			SD-08 Manufacturer's Instructions															
			Joint sealant	2.1.1														
		03100a	SD-02 Shop Drawings															
			Formwork	3.1.1														
			SD-03 Product Data															
			Design	1.3														
			Form Materials	2.1														
			Form Releasing Agents	2.1.4														
		03151a	SD-04 Samples															
			Field Molded Sealants and Primer	2.1.2.1														
			SD-06 Test Reports															
			Premolded Expansion Joint Filler	2.1.1														
			Strips															
		03201	SD-02 Shop Drawings															
			Fabrication and Placement	3.1	G	ED												
			SD-06 Test Reports															
			Material	2.2	G	AR												
			Tests, Inspections, and	2.2														
			Verifications															
		03307	SD-02 Shop Drawings															
			Grouting Plan	3.6.2	G	ED												
			SD-03 Product Data															
			Air-Entraining Admixture	2.1.3.1														
			Accelerating Admixture	2.1.3.2														

SUBMITTAL REGISTER

CONTRACT NO.

TITLE AND LOCATION
KIRBY/BEET FIELD RELIEF CULVERT

CONTRACTOR

ACTIVITY NO	TRANSMITTAL NO	SPEC SECT	DESCRIPTION ITEM SUBMITTED	PARAGRAPH #	CLASSIFICATION	GOVT OR A/E REVWR	CONTRACTOR: SCHEDULE DATES			CONTRACTOR ACTION			APPROVING AUTHORITY						
							SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	ACTION CODE	DATE OF ACTION	DATE FWD TO APPR AUTH/ DATE RCD FROM CONTR	DATE FWD TO OTHER REVIEWER	DATE RCD FROM OTH REVIEWER	ACTION CODE	DATE OF ACTION	MAILED TO CONTR/ DATE RCD FRM APPR AUTH	REMARKS
(a)	(b)	(c)	(d)	(e)	(f)		(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
		03307	Water-Reducing or Retarding	2.1.3.3														
			Admixture															
			Curing Materials	2.1.5														
			Batching and Mixing Equipment															
			Conveying and Placing Concrete	3.2														
			SD-06 Test Reports															
			Aggregates	2.1.2														
			Concrete Mixture Proportions	1.2.3	G	ED												
			Grout Mixture Proportions	1.2.4	G	ED												
			SD-07 Certificates															
			Cementitious Materials	2.1.1														
			Aggregates	2.1.2														
		09965A	SD-03 Product Data															
			Safety and Health Provisions	1.6	G													
			AR															
			Confined Spaces	1.6.5.1	G													
			Respirators	1.6.6.2	G													
			Certified Laboratory	1.4.2	G													
			Ventilation	1.6.5.1	G													
			Medical Status	1.7	G													
			Lead-Based Paint Removal	1.7	G													
			Environmental Protection	1.9	G													
			Waste Classification, Handling,	1.9.1	G													
			and Disposal															
			Containment	1.9.2	G													
			Visible Emissions Monitoring	1.9.3	G													

SUBMITTAL REGISTER

CONTRACT NO.

TITLE AND LOCATION
KIRBY/BEET FIELD RELIEF CULVERT

CONTRACTOR

ACTIVITY NO	TRANSMITTAL NO	SPEC SECT	DESCRIPTION ITEM SUBMITTED	PARAGRAPH #	CLASSIFICATION	GOVT OR A/E REVWR	CONTRACTOR: SCHEDULE DATES			CONTRACTOR ACTION			APPROVING AUTHORITY					MAILED TO CONTR/ DATE RCD FRM APPR AUTH	REMARKS
							SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	ACTION CODE	DATE OF ACTION	DATE FWD TO APPR AUTH/ DATE RCD FROM CONTR	DATE FWD TO OTHER REVIEWER	DATE RCD FROM OTH REVIEWER	ACTION CODE	DATE OF ACTION		
(a)	(b)	(c)	(d)	(e)	(f)		(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
		09965A	PM-10 Monitoring		G													
			Water Quality	1.9.5	G													
			Soil Quality	1.9.6	G													
			SD-04 Samples															
			Special Paint Formulas	2.1	G													
			AR															
			Paint Formulations	2.2	G													
			Solvent and Thinners	2.3.3	G													
			SD-06 Test Reports															
			TSP Monitoring	1.9.4.1	G													
			AR															
			Certified Laboratory	1.4.2	G													
			Soil Quality	1.9.6	G													
			Inspection	3.4	G													
			SD-07 Certificates															
			Qualifications	1.4	G													
			AR															
			Qualified Painting Contractor	1.4.3	G													
			Qualified Hazardous Paint	1.4.4	G													
			Removal Contractor															
			Coating Thickness Gage	1.4.6	G													
			Qualification															
		11280	SD-02 Shop Drawings															
			Lay-out drawings and materials.	1.5	G ED													
		11300	SD-02 Shop Drawings															
			Necessary Materials		G ED													

TRANSMITTAL OF SHOP DRAWINGS, EQUIPMENT DATA, MATERIAL SAMPLES, OR MANUFACTURER'S CERTIFICATES OF COMPLIANCE

(Read instructions on the reverse side prior to initiating this form)

DATE	TRANSMITTAL NO.

SECTION I - REQUEST FOR APPROVAL OF THE FOLLOWING ITEMS *(This section will be initiated by the contractor)*

TO:	FROM:	CONTRACT NO.	CHECK ONE: ☐ THIS IS A NEW TRANSMITTAL ☐ THIS IS A RESUBMITTAL OF TRANSMITTAL _____
SPECIFICATION SEC. NO. *(Cover only one section with each transmittal)*	PROJECT TITLE AND LOCATION		

ITEM NO. *a.*	DESCRIPTION OF ITEM SUBMITTED *(Type size, model number/etc.)* *b.*	MFG OR CONTR. CAT., CURVE DRAWING OR BROCHURE NO. *(See instruction no. 8)* *c.*	NO. OF COPIES *d.*	CONTRACT REFERENCE DOCUMENT		FOR CONTRACTOR USE CODE *g.*	VARIATION *(See instruction No. 6)* *h.*	FOR CE USE CODE *i.*
				SPEC. PARA. NO. *e.*	DRAWING SHEET NO. *f.*			

REMARKS

I certify that the above submitted items have been reviewed in detail and are correct and in strict conformance with the contract drawings and specifications except as other wise stated.

NAME AND SIGNATURE OF CONTRACTOR

SECTION II - APPROVAL ACTION

ENCLOSURES RETURNED *(List by Item No.)*	NAME, TITLE AND SIGNATURE OF APPROVING AUTHORITY	DATE

INSTRUCTIONS

1. Section I will be initiated by the Contractor in the required number of copies.

2. Each transmittal shall be numbered consecutively in the space provided for "Transmittal No.". This number, in addition to the contract number, will form a serial number for identifying each submittal. For new submittals or resubmittals mark the appropriate box; on resubmittals, insert transmittal number of last submission as well as the new submittal number.

3. The "Item No." will be the same "Item No." as indicated on ENG FORM 4288 for each entry on this form.

4. Submittals requiring expeditious handling will be submitted on a separate form.

5. Separate transmittal form will be used for submittals under separate sections of the specifications.

6. A check shall be placed in the "Variation" column when a submittal is not in accordance with the plans and specifications--also, a written statement to that effect shall be included in the space provided for "Remarks".

7. Form is self-transmittal, letter of transmittal is not required.

8. When a sample of material or Manufacturer's Certificate of Compliance is transmitted, indicate "Sample" or "Certificate" in column c, Section I.

9. U.S. Army Corps of Engineers approving authority will assign action codes as indicated below in space provided in Section I, column i to each item submitted. In addition they will ensure enclosures are indicated and attached to the form prior to return to the contractor. The Contractor will assign action codes as indicated below in Section I, column g, to each item submitted.

THE FOLLOWING ACTION CODES ARE GIVEN TO ITEMS SUBMITTED

A	--	Approved as submitted.	E	--	Disapproved (See attached).
B	--	Approved, except as noted on drawings.	F	--	Receipt acknowledged.
C	--	Approved, except as noted on drawings. Refer to attached sheet resubmission required.	FX	--	Receipt acknowledged, does not comply as noted with contract requirements.
D	--	Will be returned by separate correspondence.	G	--	Other *(Specify)*

10. Approval of items does not relieve the contractor from complying with all the requirements of the contract plans and specifications.

SECTION 01356

STORM WATER POLLUTION PREVENTION MEASURES

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 4439	(1997) Standard Terminology for Geosynthetics
ASTM D 4491	(1996) Water Permeability of Geotextiles by Permittivity
ASTM D 4533	(1991; R 1996) Trapezoid Tearing Strength of Geotextiles
ASTM D 4632	(1991; R 1996)) Grab Breaking Load and Elongation of Geotextiles
ASTM D 4751	(1995) Determining Apparent Opening Size of a Geotextile
ASTM D 4873	(1995) Identification, Storage, and Handling of Geosynthetic Rolls

1.2 GENERAL

The Contractor shall implement the storm water pollution prevention measures specified in this section in a manner which will meet the requirements of Section 01561 ENVIRONMENTAL PROTECTION, and the requirements of the National Pollution Discharge Elimination System (NPDES) permit attached to Section 01000 - ADMINISTRATIVE REQUIREMENTS.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-07 Certificates

Mill Certificate or Affidavit

Certificate attesting that the Contractor has met all specified requirements.

1.4 EROSION AND SEDIMENT CONTROLS

The controls and measures required by the Contractor are described below.

1.4.1 Stabilization Practices

The stabilization practices to be implemented shall include temporary seeding, mulching, geotextiles, erosion control mats, protection of trees, preservation of mature vegetation, etc. On his daily CQC Report, the Contractor shall record the dates when the major grading activities occur, (e.g., clearing and grubbing, excavation, and grading); when construction activities temporarily or permanently cease on a portion of the site; and when stabilization practices are initiated. Except as provided in paragraphs UNSUITABLE CONDITIONS and NO ACTIVITY FOR LESS THAN 21 DAYS, stabilization practices shall be initiated as soon as practicable, but no more than 14 days, in any portion of the site where construction activities have temporarily or permanently ceased.

1.4.1.1 Unsuitable Conditions

Where the initiation of stabilization measures by the fourteenth day after construction activity temporarily or permanently ceases is precluded by unsuitable conditions caused by the weather, stabilization practices shall be initiated as soon as practicable after conditions become suitable.

1.4.1.2 No Activity for Less Than 21 Days

Where construction activity will resume on a portion of the site within 21 days from when activities ceased (e.g., the total time period that construction activity is temporarily ceased is less than 21 days), then stabilization practices do not have to be initiated on that portion of the site by the fourteenth day after construction activity temporarily ceased.

1.4.2 Structural Practices

Structural practices shall be implemented to divert flows from exposed soils, temporarily store flows, or otherwise limit runoff and the discharge of pollutants from exposed areas of the site. Structural practices shall be implemented in a timely manner during the construction process to minimize erosion and sediment runoff. Structural practices shall include the following devices. Location and details of installation and construction are shown on the drawings.

1.4.2.1 Silt Fences

The Contractor shall provide silt fences as a temporary structural practice to minimize erosion and sediment runoff. Silt fences shall be properly installed to effectively retain sediment immediately after completing each phase of work where erosion would occur in the form of sheet and rill erosion (e.g. clearing and grubbing, excavation, and grading). Silt fences shall be installed in the locations indicated on the drawings. Final removal of silt fence barriers shall be upon approval by the Contracting Officer.]

1.4.2.2 Rock Construction Entrances

The Contractor shall provide rock construction entrances at all points of entry to the construction site. Rock construction entrances shall be placed prior to all other construction activities on site.

PART 2 PRODUCTS

2.1 COMPONENTS FOR SILT FENCES

2.1.1 Filter Fabric

The geotextile shall comply with the requirements of ASTM D 4439, and shall consist of polymeric filaments which are formed into a stable network such that filaments retain their relative positions. The filament shall consist of a long-chain synthetic polymer composed of at least 85 percent by weight of ester, propylene, or amide, and shall contain stabilizers and/or inhibitors added to the base plastic to make the filaments resistance to deterioration due to ultraviolet and heat exposure. Synthetic filter fabric shall contain ultraviolet ray inhibitors and stabilizers to provide a minimum of six months of expected usable construction life at a temperature range of 0 to 120 degrees F. The filter fabric shall meet the following requirements:

FILTER FABRIC FOR SILT SCREEN FENCE

PHYSICAL PROPERTY	TEST PROCEDURE	STRENGTH REQUIREMENT
Grab Tensile	ASTM D 4632	100 lbs. min.
Elongation (%)		30 % max.
Trapezoid Tear	ASTM D 4533	55 lbs. min.
Permittivity	ASTM D 4491	0.2 sec-1
AOS (U.S. Std Sieve)	ASTM D 4751	20-100

2.1.2 Silt Fence Stakes and Posts

The Contractor may use either wooden stakes or steel posts for fence construction. Wooden stakes utilized for silt fence construction, shall have a minimum cross section of 2 inches by 2 inches when oak is used and 4 inches by 4 inches when pine is used. Steel posts (standard "U" or "T" section) utilized for silt fence construction, shall have a minimum weight of 1.33 pounds per linear foot.

2.1.3 Mill Certificate or Affidavit

A mill certificate or affidavit shall be provided attesting that the fabric and factory seams meet chemical, physical, and manufacturing requirements specified above. The mill certificate or affidavit shall specify the actual Minimum Average Roll Values and shall identify the fabric supplied by roll identification numbers. The Contractor shall submit a mill certificate or affidavit signed by a legally authorized official from the company manufacturing the filter fabric.

2.1.4 Identification Storage and Handling

Filter fabric shall be identified, stored and handled in accordance with ASTM D 4873.

2.2 ROCK CONSTRUCTION ENTRANCES

Rock construction entrances shall be constructed to the minimum width, length, and thickness dimensions shown on the drawings. Rock shall be

ASAHTO No. 1 as specified in PADOT Publication 408, Section 703.2. For installation in clay or poorly drained soils, a geotextile fabric underlayment of a type recommended for such applications by the manufacturer shall be used.

PART 3 EXECUTION

3.1 INSTALLATION OF SILT FENCES

Silt fences shall extend a minimum of 18 inches above the ground surface and shall not exceed 30 inches above the ground surface. Filter fabric shall be from a continuous roll cut to the length of the barrier to avoid the use of joints. When joints are unavoidable, filter fabric shall be spliced together at a support post, with overlap as shown on plans, and securely sealed. A trench shall be excavated approximately 6 inches wide and 6 inches deep on the upslope side of the location of the silt fence. The 6-inch by 6-inch trench shall be backfilled and the soil compacted over the filter fabric. Silt fences shall be removed upon approval by the Contracting Officer.

3.2 MAINTENANCE

The Contractor shall maintain the temporary and permanent vegetation, erosion and sediment control measures, and other protective measures in good and effective operating condition by performing routine inspections to determine condition and effectiveness, by restoration of destroyed vegetative cover, and by repair of erosion and sediment control measures and other protective measures. The following procedures shall be followed to maintain the protective measures.

3.2.1 Silt Fence Maintenance

Silt fences shall be inspected in accordance with paragraph INSPECTIONS. Any required repairs shall be made promptly. Close attention shall be paid to the repair of damaged silt fence resulting from end runs and undercutting. Should the fabric on a silt fence decompose or become ineffective, and the barrier is still necessary, the fabric shall be replaced promptly. Sediment deposits shall be removed when deposits reach one-third of the height of the barrier. When a silt fence is no longer required, it shall be removed. The immediate area occupied by the fence and any sediment deposits shall be shaped to an acceptable grade. The areas disturbed by this shaping shall be seeded in accordance with Section 02921A SEEDING except that the coverage requirements in paragraph SEED ESTABLISHMENT PERIOD do not apply.

3.2.2 Rock Construction Entrance Maintenance

The structure's thickness shall be maintained to the specified dimensions by adding rock. A stock pile of rock material shall be maintained on site for this purpose. All sediment deposited on public roadways and paths shall be removed immediately and returned to the construction site. Washing of roadway with water is not permitted.

3.3 INSPECTIONS

3.3.1 General

The Contractor shall inspect disturbed areas of the construction site, areas used for storage of materials that are exposed to precipitation that

have not been finally stabilized, stabilization practices, structural practices, other controls, and area where vehicles exit the site daily. Where sites have been finally stabilized, such inspection shall be conducted at least once every seven (7) calendar days.

3.3.2 Inspections Details

Disturbed areas and areas used for material storage that are exposed to precipitation shall be inspected for evidence of, or the potential for, pollutants entering the drainage system. Erosion and sediment control measures identified in the Storm Water Pollution Prevention Plan shall be observed to ensure that they are operating correctly. Discharge locations or points shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters. Locations where vehicles exit the site shall be inspected for evidence of offsite sediment tracking.

3.3.3 Inspection Reports

For each inspection conducted, the Contractor shall prepare a report summarizing the scope of the inspection, name(s) and qualifications of personnel making the inspection, the date(s) of the inspection, major observations relating to the implementation of the Storm Water Pollution Prevention Plan, maintenance performed, and actions taken. The report shall be furnished to the Contracting Officer within 24 hours of the inspection as a part of the Contractor's daily CQC REPORT. A copy of the inspection report shall be maintained on the job site.

-- End of Section --

SECTION 01420

SOURCES FOR REFERENCE PUBLICATIONS

PART 1 GENERAL

1.1 REFERENCES

Various publications are referenced in other sections of the specifications to establish requirements for the work. These references are identified in each section by document number, date and title. The document number used in the citation is the number assigned by the standards producing organization, (e.g. ASTM B 564 Nickel Alloy Forgings). However, when the standards producing organization has not assigned a number to a document, an identifying number has been assigned for reference purposes.

1.2 ORDERING INFORMATION

The addresses of the standards publishing organizations whose documents are referenced in other sections of these specifications are listed below, and if the source of the publications is different from the address of the sponsoring organization, that information is also provided. Documents listed in the specifications with numbers which were not assigned by the standards producing organization should be ordered from the source by title rather than by number.

ACI INTERNATIONAL (ACI)
P.O. Box 9094
Farmington Hills, MI 48333-9094
Ph: 248-848-3700
Fax: 248-848-3701
Internet: http://www.aci-int.org

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)
1819 L Street, NW, 6th Floor
Washington, DC 20036
Ph: 202-293-8020
Fax: 202-293-9287
Internet: http://www.ansi.org/

Note --- Documents beginning with the letter "S" can be ordered from:

Acoustical Society of America
Standards and Publications Fulfillment Center
P. O. Box 1020
Sewickley, PA 15143-9998
Ph: 412-741-1979
Fax: 412-741-0609
Internet: http://asa.aip.org
General e-mail: asa@aip.org
Publications e-mail: asapubs@abdintl.com

AMERICAN WELDING SOCIETY (AWS)
550 N.W. LeJeune Road
Miami, FL 33126

Ph: 800-443-9353 - 305-443-9353
Fax: 305-443-7559
Internet: http://www.amweld.org

ASTM INTERNATIONAL (ASTM)

100 Barr Harbor Drive
West Conshohocken, PA 19428-2959
Ph: 610-832-9585
Fax: 610-832-9555
Internet: http://www.astm.org

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)
1 Batterymarch Park
P.O. Box 9101
Quincy, MA 02269-9101
Ph: 617-770-3000
Fax: 617-770-0700
Internet: http://www.nfpa.org

NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH (NIOSH)
Mail Stop C-13
4676 Columbia Parkway
Cincinnati, OH 45226-1998
Ph: 800-356-4674
Fx: 513-533-8573
Internet: http://www.cdc.gov/niosh/homepage.html
To order pubs for which a fee is charged, order from:
Superintendent of Documents
U.S. Government Printing Office
732 North Capitol Street, NW
Mailstop: SDE
Washington, DC 20401
Ph: 866-512-2800 or 202-512-1800
Fax: 202-512-2250
Internet: http://www.gpo.gov

NATIONAL READY-MIXED CONCRETE ASSOCIATION (NRMCA)
900 Spring St.
Silver Spring, MD 20910
Ph: 301-587-1400
Fax: 301-585-4219
Internet: http://www.nrmca.org

THE SOCIETY FOR PROTECTIVE COATINGS (SSPC)
40 24th Street, 6th Floor
Pittsburgh, PA 15222-4656
Ph: 412-281-2331
Fax: 412-281-9992
Internet: http://www.sspc.org

U.S. ARMY CORPS OF ENGINEERS (USACE)
Order CRD-C DOCUMENTS from:
U.S. Army Engineer Waterways Experiment Station
ATTN: Technical Report Distribution Section, Services Branch, TIC
3909 Halls Ferry Rd.
Vicksburg, MS 39180-6199
Ph: 601-634-2664

Fax: 601-634-2388
Internet: http://www.wes.army.mil/SL/MTC/handbook/handbook.htm

Order Other Documents from:
USACE Publications Depot
Attn: CEIM-SP-D
2803 52nd Avenue
Hyattsville, MD 20781-1102
Ph: 301-394-0081
Fax: 301-394-0084
Internet: http://www.usace.army.mil/publications
or http://www.hnd.usace.army.mil/techinfo/index.htm

U.S. DEPARTMENT OF AGRICULTURE (USDA)
Order AMS Publications from:
AGRICULTURAL MARKETING SERVICE (AMS)
Seed Regulatory and Testing Branch
USDA, AMS, LS Div.
Room 209, Bldg. 306, BARC-East
Beltsville, MD 20705-2325
Ph: 301-504-9430
Fax: 301-504-8098
Internet: http://www.ams.usda.gov/lsg/seed.htm
e-mail: jeri.irwin@usda.gov

Order Other Publications from:
U.S. Department of Agriculture
14th and Independence Ave., SW, Room 4028-S
Washington, DC 20250
Ph: 202-720-2791
Fax: 202-720-2166
Internet: http://www.usda.gov

U.S. DEPARTMENT OF COMMERCE (DOC)
1401 Constitution Avenue, NW
Washington, DC 20230
Internet: http://www.commerce.gov/

Order Publications From:
National Technical Information Service
5285 Port Royal Road
Springfield, VA 22161
Ph: 703-605-6000
Fax: 703-605-6900
Internet: http://www.ntis.gov

U.S. GENERAL SERVICES ADMINISTRATION (GSA)
General Services Administration
1800 F Street, NW
Washington, DC 20405
PH: 202-501-0705

Order from:
General Services Administration
Federal Supply Service Bureau
1941 Jefferson Davis Highway
Arlington, VA 22202
PH: 703-605-5400
Internet: http://www.fss.gsa.gov/pub/fed-specs.cfm

- - - - - Commercial Item Description Documents - - - - -

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)
700 Pennsylvania Avenue, N.W.
Washington, D.C. 20408
Phone: 866-325-7208
Internet: http://www.archives.gov

Order documents from:
Superintendent of Documents
U.S.Government Printing Office
732 North Capitol Street, NW
Washington, DC 20401
Mailstop: SDE
Ph: 866-512-1800 or 202-512-1800
Fax: 202-512-2250
Internet: http://www.gpo.gov
E-mail: gpoaccess@gpo.gov

-- End of Section --

SECTION 01451

CONTRACTOR QUALITY CONTROL

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 3740	(1999b) Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction
ASTM E 329	(1998a) Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction

1.2 PAYMENT

Separate payment will not be made for providing and maintaining an effective Quality Control program, and all costs associated therewith shall be included in the applicable unit prices or lump-sum prices contained in the Price Schedule.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

CQC Plan; G AR.

Identifies personnel, procedures, control, instructions, test, records, and forms to be used.

Phase Notification

The Government shall be notified in a specified amount of time in advance of beginning the preparatory control phase.

Request; G AR.

The requesting of specialized individuals in specific disciplines to perform quality control.

CQC Mgr Qualification; G AR.

The evaluation of the project to determine the level of CQC System Manager required.

SD-05 Design Data

Notification of Changes

Any changes made by the Contractor.

Punchlist

Near the completion of all work, the CQC System Manager shall prepare a list of items which do not conform to the approved drawings and specifications.

Minutes

Prepared by the Government and signed by both the Contractor and the Contracting Officer and shall become a part of the contract file.

SD-06 Test Reports

Tests

Specified or required tests shall be done by the Contractor to verify that control measures are adequate.

Documentation

Results of tests taken.

Tests Performed

An information copy provided directly to the Contracting Officer.

QC Records; G AR.

Provide factual evidence that required quality control activities and/or tests have been performed.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 GENERAL REQUIREMENTS

The Contractor is responsible for quality control and shall establish and maintain an effective quality control system in compliance with the Contract Clause titled "Inspection of Construction." The quality control system shall consist of plans, procedures, and organization necessary to produce an end product which complies with the contract requirements. The system shall cover all construction operations, both onsite and offsite, and shall be keyed to the proposed construction sequence. The site project superintendent will be held responsible for the quality of work on the job and is subject to removal by the Contracting Officer for non-compliance with the quality requirements specified in the contract. The site project superintendent in this context shall be the highest level manager responsible for the overall construction activities at the site, including

quality and production. The site project superintendent shall maintain a physical presence at the site at all times, except as otherwise acceptable to the Contracting Officer, and shall be responsible for all construction and construction related activities at the site.

3.2 CQC PLAN

3.2.1 General

The Contractor shall furnish for review by the Government, not later than 30 days after receipt of notice to proceed, the Contractor Quality Control (CQC) Plan proposed to implement the requirements of the Contract Clause titled "Inspection of Construction." The plan shall identify personnel, procedures, control, instructions, tests, records, and forms to be used. The Government will consider an interim plan for the first 60 days of operation. Construction will be permitted to begin only after acceptance of the CQC Plan or acceptance of an interim plan applicable to the particular feature of work to be started. Work outside of the features of work included in an accepted interim plan will not be permitted to begin until acceptance of a CQC Plan or another interim plan containing the additional features of work to be started.

3.2.2 Content of the CQC Plan

The CQC Plan shall include, as a minimum, the following to cover all construction operations, both onsite and offsite, including work by subcontractors, fabricators, suppliers, and purchasing agents:

a. A description of the quality control organization, including a chart showing lines of authority and acknowledgment that the CQC staff shall implement the three phase control system for all aspects of the work specified. The staff shall include a CQC System Manager who shall report to the project superintendent.

b. The name, qualifications (in resume format), duties, responsibilities, and authorities of each person assigned a CQC function.

c. A copy of the letter to the CQC System Manager signed by an authorized official of the firm which describes the responsibilities and delegates sufficient authorities to adequately perform the functions of the CQC System Manager, including authority to stop work which is not in compliance with the contract. The CQC System Manager shall issue letters of direction to all other various quality control representatives outlining duties, authorities, and responsibilities. Copies of these letters shall also be furnished to the Government.

d. Procedures for scheduling, reviewing, certifying, and managing submittals, including those of subcontractors, offsite fabricators, suppliers, and purchasing agents. These procedures shall be in accordance with Section 01330 SUBMITTAL PROCEDURES.

e. Control, verification, and acceptance testing procedures for each specific test to include the test name, specification paragraph requiring test, feature of work to be tested, test frequency, and person responsible for each test. The Contractor shall include a copy of his proposed laboratory's latest Corps of Engineers inspection report in the Quality Control Plan. The inspection

report details the tests that the lab has been validated to perform under Corps of Engineers contracts. (Laboratory facilities will be approved by the Contracting Officer.)

f. Procedures for tracking preparatory, initial, and follow-up control phases and control, verification, and acceptance tests including documentation.

g. Procedures for tracking construction deficiencies from identification through acceptable corrective action. These procedures shall establish verification that identified deficiencies have been corrected.

h. Reporting procedures, including proposed reporting formats.

i. A list of the definable features of work. A definable feature of work is a task which is separate and distinct from other tasks, has separate control requirements, and may be identified by different trades or disciplines, or it may be work by the same trade in a different environment. Although each section of the specifications may generally be considered as a definable feature of work, there are frequently more than one definable features under a particular section. This list will be agreed upon during the coordination meeting.

3.2.3 Acceptance of Plan

Acceptance of the Contractor's plan is required prior to the start of construction. Acceptance is conditional and will be predicated on satisfactory performance during the construction. The Government reserves the right to require the Contractor to make changes in his CQC Plan and operations including removal of personnel, as necessary, to obtain the quality specified.

3.2.4 Notification of Changes

After acceptance of the CQC Plan, the Contractor shall notify the Contracting Officer in writing of any proposed change. Proposed changes are subject to acceptance by the Contracting Officer.

3.3 COORDINATION MEETING

After the Preconstruction Conference, before start of construction, and prior to acceptance by the Government of the CQC Plan, the Contractor shall meet with the Contracting Officer or Authorized Representative and discuss the Contractor's quality control system. The CQC Plan shall be submitted for review a minimum of 14 calendar days prior to the Coordination Meeting. During the meeting, a mutual understanding of the system details shall be developed, including the forms for recording the CQC operations, control activities, testing, administration of the system for both onsite and offsite work, and the interrelationship of Contractor's Management and control with the Government's Quality Assurance. Minutes of the meeting shall be prepared by the Government and signed by both the Contractor and the Contracting Officer. The minutes shall become a part of the contract file. There may be occasions when subsequent conferences will be called by either party to reconfirm mutual understandings and/or address deficiencies in the CQC system or procedures which may require corrective action by the Contractor.

3.4 QUALITY CONTROL ORGANIZATION

3.4.1 Personnel Requirements

The requirements for the CQC organization are a CQC System Manager and sufficient number of additional qualified personnel to ensure safety and contract compliance. The Safety and Health Manager shall receive direction and authority from the CQC System Manager and shall serve as a member of the CQC staff. Personnel identified in the technical provisions as requiring specialized skills to assure the required work is being performed properly will also be included as part of the CQC organization.The Contractor's CQC staff shall maintain a presence at the site at all times during progress of the work and have complete authority and responsibility to take any action necessary to ensure contract compliance. The CQC staff shall be subject to acceptance by the Contracting Officer. The Contractor shall provide adequate office space, filing systems and other resources as necessary to maintain an effective and fully functional CQC organization. Complete records of all letters, material submittals, shop drawing submittals, schedules and all other project documentation shall be promptly furnished to the CQC organization by the Contractor. The CQC organization shall be responsible to maintain these documents and records at the site at all times, except as otherwise acceptable to the Contracting Officer.

3.4.2 CQC System Manager

The Contractor shall identify as CQC System Manager an individual within the onsite work organization who shall be responsible for overall management of CQC and have the authority to act in all CQC matters for the Contractor. The CQC System Manager shall be a construction person with a minimum of 10 years in related work. This CQC System Manager shall be on the site at all times during construction and shall be employed by the prime Contractor. The CQC System Manager shall be assigned as System Manager but may have duties as project superintendent in addition to quality control. An alternate for the CQC System Manager shall be identified in the plan to serve in the event of the System Manager's absence. The requirements for the alternate shall be the same as for the designated CQC System Manager.

3.4.3 CQC Personnel

In addition to CQC personnel specified elsewhere in the contract, the Contractor shall provide as part of the CQC organization specialized personnel to assist the CQC System Manager for the following areas: structural, materials technician, and submittals clerk,. These individuals may be employees of the prime or subcontractor]; be responsible to the CQC System Manager; be physically present at the construction site during work on their areas of responsibility; have the necessary education and/or experience in accordance with the experience matrix listed herein. These individuals may perform other duties but must be allowed sufficient time to perform their assigned quality control duties as described in the Quality Control Plan.

Experience Matrix

Area	Qualifications
a. Structural	Graduate Structural Engineer with 2 yrs experience or person with 5

Experience Matrix

Area	Qualifications
	yrs related experience
b. Submittals	Submittal Clerk with 1 yr experience
c. Concrete, Pavements and Soils	Materials Technician with 2 yrs experience for the appropriate area

3.4.4 Additional Requirement

In addition to the above experience and/or education requirements the CQC System Manager shall have completed the course entitled "Construction Quality Management for Contractors" within 45 calendar days after NTP is a mandatory requirement for the position of the Quality Control Systems Manager. Certification is good for five (5) years at which time re-training is required. The Contractor's QC Systems Manager may be appointed and serve fully in that capacity pending certification. If the CQC Systems Manager fails to successfully complete the training, the Contractor should promptly appoint a new CQSM who shall then attend the next available course. The course is nine (9) hours long (1 day). The Construction Quality Management Course (CQMC) will be taught at least nine (9) times per year by the Baltimore District Corps of Engineers, at various locations around Baltimore and Washington, D.C., or at another site if conditions warrant. The CQMC cost will be borne by the Contractor and is one hundred and thirty five dollars ($135.00) per course, per person. Payment shall be made by check payable to either sponsors of the course; Associated Builders and Contractors, Inc., (ABC) 14120 Park Long Court, Suite 111, Chantilly, Virginia 20151 (Phone: 703-968-6205), or to the Associated General Contractors of America (GCA), Maryland Chapter, 1301 York Road, Heaver Plaza, Suite 202, Lutherville, Maryland 21093 (Phone: 410-321-7870) prior to the start of the course. Reservations to attend the course should be made directly to the organization sponsoring the course they attend. The Contractor has forty-five (45) calendar days to attend the course after the inssuance of the NTP. The Contractor shall contact the Contracting Officer upon award of the contract arrangements for the course.

3.4.5 Organizational Changes

The Contractor shall maintain the CQC staff at full strength at all times. When it is necessary to make changes to the CQC staff, the Contractor shall revise the CQC Plan to reflect the changes and submit the changes to the Contracting Officer for acceptance.

3.5 SUBMITTALS

Submittals, if needed, shall be made as specified in Section 01330 SUBMITTAL PROCEDURES. The CQC organization shall be responsible for certifying that all submittals and deliverables are in compliance with the contract requirements.

3.6 CONTROL

Contractor Quality Control is the means by which the Contractor ensures that the construction, to include that of subcontractors and suppliers, complies with the requirements of the contract. At least three phases of control shall be conducted by the CQC System Manager for each definable feature of work as follows:

3.6.1 Preparatory Phase

This phase shall be performed prior to beginning work on each definable feature of work, after all required plans/documents/materials are approved/accepted, and after copies are at the work site. This phase shall include:

a. A review of each paragraph of applicable specifications, reference codes, and standards. A copy of those sections of referenced codes and standards applicable to that protion of the work to be accomplished in the field shall be made available by the Contractor at the preparatory inspection. These copies shall be maintained in the field and available for use by Government personnel until final acceptance of the work.

b. A review of the contract drawings.

c. A check to assure that all materials and/or equipment have been tested, submitted, and approved.

d. Review of provisions that have been made to provide required control inspection and testing.

e. Examination of the work area to assure that all required preliminary work has been completed and is in compliance with the contract.

f. A physical examination of required materials, equipment, and sample work to assure that they are on hand, conform to approved shop drawings or submitted data, and are properly stored.

g. A review of the appropriate activity hazard analysis to assure safety requirements are met.

h. Discussion of procedures for controlling quality of the work including repetitive deficiencies. Document construction tolerances and workmanship standards for that feature of work.

i. A check to ensure that the portion of the plan for the work to be performed has been accepted by the Contracting Officer.

j. Discussion of the initial control phase.

k. The Government shall be notified at least 72 hours in advance of beginning the preparatory control phase. This phase shall include a meeting conducted by the CQC System Manager and attended by the superintendent, other CQC personnel (as applicable), and the foreman responsible for the definable feature. The results of the preparatory phase actions shall be documented by separate minutes prepared by the CQC System Manager and attached to the daily CQC report. The Contractor shall instruct applicable workers as to the acceptable level of workmanship required in order to meet contract specifications.

3.6.2 Initial Phase

This phase shall be accomplished at the beginning of a definable feature of work. The following shall be accomplished:

a. A check of work to ensure that it is in full compliance with contract requirements. Review minutes of the preparatory meeting.

b. Verify adequacy of controls to ensure full contract compliance. Verify required control inspection and testing.

c. Establish level of workmanship and verify that it meets minimum acceptable workmanship standards. Compare with required sample panels as appropriate.

d. Resolve all differences.

e. Check safety to include compliance with and upgrading of the safety plan and activity hazard analysis. Review the activity analysis with each worker.

f. The Government shall be notified at least 72 hours in advance of beginning the initial phase. Separate minutes of this phase shall be prepared by the CQC System Manager and attached to the daily CQC report. Exact location of initial phase shall be indicated for future reference and comparison with follow-up phases.

g. The initial phase should be repeated for each new crew to work onsite, or any time acceptable specified quality standards are not being met.

3.6.3 Follow-up Phase

Daily checks shall be performed to assure control activities, including control testing, are providing continued compliance with contract requirements, until completion of the particular feature of work. The checks shall be made a matter of record in the CQC documentation. Final follow-up checks shall be conducted and all deficiencies corrected prior to the start of additional features of work which may be affected by the deficient work. The Contractor shall not build upon nor conceal non-conforming work.

3.6.4 Additional Preparatory and Initial Phases

Additional preparatory and initial phases shall be conducted on the same definable features of work if the quality of on-going work is unacceptable, if there are changes in the applicable CQC staff, onsite production supervision or work crew, if work on a definable feature is resumed after a substantial period of inactivity, or if other problems develop.

3.7 TESTS

3.7.1 Testing Procedure

The Contractor shall perform specified or required tests to verify that control measures are adequate to provide a product which conforms to contract requirements. Upon request, the Contractor shall furnish to the Government duplicate samples of test specimens for possible testing by the

Government. Testing includes operation and/or acceptance tests when specified. The Contractor shall procure the services of a Corps of Engineers approved testing laboratory or establish an approved testing laboratory at the project site. The Contractor shall perform the following activities and record and provide the following data:

a. Verify that testing procedures comply with contract requirements.

b. Verify that facilities and testing equipment are available and comply with testing standards.

c. Check test instrument calibration data against certified standards.

d. Verify that recording forms and test identification control number system, including all of the test documentation requirements, have been prepared.

e. Results of all tests taken, both passing and failing tests, shall be recorded on the CQC report for the date taken. Specification paragraph reference, location where tests were taken, and the sequential control number identifying the test shall be given. If approved by the Contracting Officer, actual test reports may be submitted later with a reference to the test number and date taken. An information copy of tests performed by an offsite or commercial test facility shall be provided directly to the Contracting Officer. Failure to submit timely test reports as stated may result in nonpayment for related work performed and disapproval of the test facility for this contract.

3.7.2 Testing Laboratories

3.7.2.1 Capability Check

The Government reserves the right to check laboratory equipment in the proposed laboratory for compliance with the standards set forth in the contract specifications and to check the laboratory technician's testing procedures and techniques. Laboratories utilized for testing soils, concrete, asphalt, and steel shall meet criteria detailed in ASTM D 3740 and ASTM E 329.

3.7.2.2 Laboratory Approval

The Contractor shall use a testing laboratory that has been previously approved by the Corps of Engineers or obtain approval for a laboratory established at the project site. Approved laboratories are listed at the following web site: http://www.wes.army.mil/SL/MTC/ValStatesTbl.htm If the Contractor elects to set up an on-site laboratory at the project site, the Contractor will be assessed $4500.00 for the cost of inspection of this lab by the Corps of Engineers.

3.7.3 Onsite Laboratory

The Government reserves the right to utilize the Contractor's control testing laboratory and equipment to make assurance tests, and to check the Contractor's testing procedures, techniques, and test results at no additional cost to the Government.

3.7.4 Furnishing or Transportation of Samples for Testing

Furnishing or Transportation of Samples for Testing: Costs incidental to the transportation of samples or materials will be borne by the Contractor. Samples of materials for test verification and acceptance testing by the Government shall be delivered to the following address:

Field Exploration Unit
or
Soils Laboratory Unit
(indicate which on shipping or mailing forms)
Fort McHenry Yard
Baltimore, Maryland 21230"

3.8 COMPLETION INSPECTION

3.8.1 Punch-Out Inspection

Near the completion of all work or any increment thereof established by a completion time stated in the Special Clause in Section 00800 of the Solicitation entitled "Commencement, Prosecution, and Completion of Work," or stated elsewhere in the specifications, the CQC System Manager shall conduct an inspection of the work and develop a punchlist of items which do not conform to the approved drawings and specifications. Such a list of deficiencies shall be included in the CQC documentation, as required by paragraph DOCUMENTATION below, and shall include the estimated date by which the deficiencies will be corrected. The CQC System Manager or staff shall make a second inspection to ascertain that all deficiencies have been corrected. Once this is accomplished, the Contractor shall notify the Government that the site is ready for the Government Pre-Final inspection.

3.8.2 Pre-Final Inspection

The Government will perform pre-final inspection to verify that work at the site is complete and ready to be turned over. A Government Pre-Final Punch List may be developed as a result of this inspection. The Contractor's CQC System Manager shall ensure that all items on this list have been corrected before notifying the Government so that a Final inspection with the County can be scheduled. Any items noted on the Pre-Final inspection shall be corrected in a timely manner. These inspections and any deficiency corrections required by this paragraph shall be accomplished within the time slated for completion of the entire work or any particular increment of the work if the project is divided into increments by separate completion dates.

3.8.3 Final Acceptance Inspection

The Contractor's Quality Control Inspection personnel, plus the superintendent or other primary management person, and the Contracting Officer's Representative shall be in attendance at the final acceptance inspection. Additional Government personnel including, but not limited to, those from the County may also be in attendance. The final acceptance inspection will be formally scheduled by the Contracting Officer based upon results of the Pre-Final inspection. Notice shall be given to the Contracting Officer at least 14 days prior to the final acceptance inspection and shall include the Contractor's assurance that all specific items previously identified to the Contractor as being unacceptable, along with all remaining work performed under the contract, will be complete and acceptable by the date scheduled for the final acceptance inspection. Failure of the Contractor to have all contract work acceptably complete for this inspection will be cause for the Contracting Officer to bill the

Contractor for the Government's additional inspection cost in accordance with the contract clause titled "Inspection of Construction".

3.9 DOCUMENTATION

The Contractor shall maintain current records providing factual evidence that required quality control activities and/or tests have been performed. These records shall include the work of subcontractors and suppliers and shall be on an acceptable form that includes, as a minimum, the following information:

a. Contractor/subcontractor and their area of responsibility.

b. Operating plant/equipment with hours worked, idle, or down for repair.

c. Work performed each day, giving location, description, and by whom. When Network Analysis (NAS) is used, identify each phase of work performed each day by NAS activity number.

d. Test and/or control activities performed with results and references to specifications/drawings requirements. The control phase shall be identified (Preparatory, Initial, Follow-up). List deficiencies noted along with corrective action.

e. Quantity of materials received at the site with statement as to acceptability, storage, and reference to specifications/drawings requirements.

f. Submittals and deliverables reviewed, with contract reference, by whom, and action taken.

g. Off-site surveillance activities, including actions taken.

h. Job safety evaluations stating what was checked, results, and instructions or corrective actions.

i. Instructions given/received and conflicts in plans and/or specifications.

j. Contractor's verification statement.

These records shall indicate a description of trades working on the project; the number of personnel working; weather conditions encountered; and any delays encountered. These records shall cover both conforming and deficient features and shall include a statement that equipment and materials incorporated in the work and workmanship comply with the contract. The original and one copy of these records in report form shall be furnished to the Government daily within 24 hours after the date covered by the report, except that reports need not be submitted for days on which no work is performed. As a minimum, one report shall be prepared and submitted for every 7 days of no work and on the last day of a no work period. All calendar days shall be accounted for throughout the life of the contract. The first report following a day of no work shall be for that day only. Reports shall be signed and dated by the CQC System Manager. The report from the CQC System Manager shall include copies of test reports and copies of reports prepared by all subordinate quality control personnel.

3.10 SAMPLE FORMS

Sample forms enclosed at the end of this section.

3.11 NOTIFICATION OF NONCOMPLIANCE

The Contracting Officer will notify the Contractor of any detected noncompliance with the foregoing requirements. The Contractor shall take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor at the work site, shall be deemed sufficient for the purpose of notification. If the Contractor fails or refuses to comply promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to such stop orders shall be made the subject of claim for extension of time or for excess costs or damages by the Contractor.

-- End of Section --

CONSTRUCTION QUALITY CONTROL REPORT

Contractor Name
Contractor Phone Number

Contract No. **Date:** _____
Project Name:

Report No.: _____

Weather: _____ **Temp:** _____ **Site Conditions:** _____
Superintendent: _____

Type of Workers	Number	Types of Construction Equipment on Site	Number

Total Prime Contractor Workers: _____
Total Prime Contractor Hours: _____

Subcontractors:

Company	Responsibility	Foreman	Workers/Hrs

Total Subcontractor Workers: _____
Total Subcontractor Hours: _____

Prime Contractor
Manhours Today: _____
Manhours this Month: _____
Manhours this Project: _____

Subcontractor
Manhours Today: _____
Manhours this Month: _____
Manhours this Project: _____

Contract Materials and Equipment Delivered to Site:

_____
_____
_____
_____
_____
_____
_____
_____

Did a Delay or Work Stoppage Occur Today? _____Yes _____No (If Yes, Explain)

Has Anything Developed in the Work Which May Lead to a Change or Finding of Fact?
_____Yes _____No (If Yes, Explain)

<u>Description of All Work Performed Today</u> (List by Definable Features of Work)

Preparatory or Initial Inspections Held (List by Spec Section and Description; Attach Inspection Checksheet)

Quality Control Inspections - Comments and Deficiencies Noted and Corrective Actions Taken
(List All Inspections by Subject and Spec Section)

All Instructions Received from QA Personnel and Actions Taken

Job Safety (Include Meetings Held and Deficiencies Noted with Corrective Actions)

Other Comments and Remarks

Additional Attachments

Signature: _____
Quality Control Representative/Manager

The above report is complete and correct, all materials and equipment used and all work performed during this reporting period are in compliance with the contract specifications, and submittals, except as noted above.

Signature: _____
Contractor's Approved Authorized Representative

SECTION 01510

TEMPORARY CONSTRUCTION ITEMS

PART 1 GENERAL

1.1 General

The work covered by this section consists of furnishing all labor, materials, equipment, and services and performing all work required for or incidental to the items herein specified. No separate payment will be made for the construction and services required by this section, and all costs in connection therewith shall be included in the overall cost of the work unless specifically stated otherwise.

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Haul and Access Routes; G AR.

Drawings and narrative showing routes to the site.

1.3 PROJECT SIGN: (AUG 1974)

A project sign shall be provided and erected at a location designated by the Contracting Officer. The sign shall conform to the applicable requirements of EP 310-1-6. The sign shall be erected as soon as possible and within 15 days after the date of receipt of notice to proceed. Upon completion of the project, the sign shall be removed and diposed of by the Contractor. (CENAB)

1.4 SAFETY SIGN (AUG 1974)

A safety sign shall be provided and erected at a location designated by the Contracting Officer. The sign shall conform to the applicable requirements of EP 310-1-6. The sign shall be erected as soon as possible and within 15 days after the date of receipt of notice to proceed. The data required by the sign shall be corrected daily, with light colored metallic or non-metallic numerals. Numerals, including mounting hardware, shall be subject to the approval of the Contracting Officer. Upon completion of the project, the sign shall be removed and diposed of by the Contractor. (CENAB)

1.5 TEMPORARY FILLS AND EMBANKMENTS

Depending on the operations and equipment selected by the Contractor to perform the work in accordance with the specifications and drawings, temporary fills and embankments may be required. The contractor shall, at

his expense, construct such fills and embankments as may be necessary for proper prosecution of work under this contract. All temporary fills and embankments shall be designed by the Contractor and shall be submitted to the Contracting Officer for review and approval under specification section 01561 Environmental Protection. The Contractor shall be responsible for the design and all impacts to adjacent areas and structures from these temporary embankments and fills, which shall be maintained in good condition throughout their use. Upon completion of work, temporary embankments and fills shall be removed and the area restored to the original grades or finished grades as shown on the drawings at the expense of the Contractor.

1.6 HAUL ROADS AND ACCESS ROUTES(2003)

1.6.1 Access Route Narrative, Survey, and Post-Construction Restoration

After award of the contract, the Contractor shall submit to the Contracting Officer for approval, a narrative with drawings of the through town haul and access routes intended for use. Unless otherwise directed by the Contracting Officer, only roads in the approved narrative may be used for hauling purposes. Upon approval of the haul and access routes, the Contractor and the Contracting Officer shall jointly survey the existing road conditions. Photo coverage of designated locations along the proposed route is required. Upon completion of the work, any street or city road used as a haul or access route shall be restored and/or rebuilt to the original condition. This work shall be subject to the approval of the Contracting officer at no additional cost to the Government.

1.6.2 Haul Road Construction

The Contractor shall, at his expense, construct such access roads and haul roads as may be necessary for proper prosecution of the work under this contract. Approved haul roads on public or private property shall be constructed in a workmanlike manner with suitable grades and widths. Sharp curves, blind corners, and dangerous cross traffic shall be avoided. The Contractor shall provide all necessary lighting, signs, barricades, and distinctive markings for the safe movement of traffic. The method of dust control although optional shall be adequate to insure safe operation at all times. Location, grade, width, and alignment of construction and hauling roads shall be subject to approval of the Contracting Officer. Lighting shall be adequate to assure full and clear visibility for full width of haul and work areas during any night work operations. Upon completion of the work, haul and access routes as designated by the Contracting Officer shall be removed or graded to promote drainage at the expense of the Contractor.(CENAB)

1.7 PLANT COMMUNICATION (JAN 63)

Whenever the Contractor has the individual elements of his plant so located that operation by normal voice between these elements is not satisfactory, the Contractor shall install a satisfactory means of communication, such as telephone or other suitable devices. The facilities shall be made available for use by Government personnel. (CENAB)

1.8 BARRICADES

The Contractor shall erect and maintain temporary barricades to limit

public access to hazardous areas. Such barricades shall be required whenever safe public access to paved areas such as roads, parking areas or sidewalks is prevented by construction activities or as otherwise necessary to ensure the safety of both pedestrian and vehicular traffic. Barricades shall be securely placed, clearly visible with adequate illumination to provide sufficient visual warning of the hazardous areas during both day and night. (CENAB)

1.9 MEASUREMENT AND PAYMENT

No separate measurement and payment will be made for the work performed in this Section 01510, TEMPORARY CONSTRUCTION ITEMS, specified herein, and all costs in connection therewith shall be considered a subsidiary obligation of the Contractor, and shall be included in the overall cost of the work.

1.10 SITE PLAN

The Contractor shall prepare a site plan showing fencing, the number of trailers to be used, avenues of ingress/egress to the fenced area and details of the fence installation. Any areas which may have to be graveled to prevent the tracking of mud shall also be identified. See subparagraph "Supplemental Storage Area" below. The Contractor shall also indicate if the use of a supplemental or other staging area is desired. Site plan shall be submitted under specification section 01561 - Environmental Protection

1.11 EMPLOYEE PARKING

Contractor employees shall park privately owned vehicles in the areas designated by the Contracting Officer. Designated sites are adjacent to the construction site or within reasonable walking distance of the construction site. Contractor employee parking shall not interfere with existing and established parking requirements of local residents and businesses.

1.12 CONTRACTOR'S TEMPORARY FACILITIES

1.12.1 Maintenance of Storage Area

Should the Contractor elect to traverse, with construction equipment or other vehicles, grassed or unpaved areas which are not established roadways, such areas shall be covered with a layer of gravel as necessary to prevent rutting and the tracking of mud onto paved or established roadways; gravel gradation shall be at the Contractor's discretion. Grass located within the boundaries of the construction site shall be mowed for the duration of the project. Grass and vegetation along fences, buildings, under trailers, and in areas not accessible to mowers shall be edged or trimmed neatly.

1.12.2 Security Provisions

The Contractor shall be responsible for the security of its own equipment; in addition, the Contractor shall notify the appropriate law enforcement agency requesting periodic security checks of the temporary project field office, if any. If local personnel are not available to provide security checks, the Contractor may utilize private security personnel approved by the Contracting Officer.

1.12.3 Restoration of Storage Areas

Areas used by the Contractor for the storage of equipment or material, or other use, shall be restored to the original or better condition. Gravel used to traverse grassed areas shall be removed and the area restored to its original condition, including top soil and seeding as necessary.

1.12.4 Restoration of Unpaved Parking Areas

Any unpaved areas used for parking shall be repaired as directed by the Contracting Officer at no additional expense to the Government.

PART 2 PRODUCT

NOT APPLICABLE

PART 3 EXECUTION

NOT APPLICABLE

-- End of Section --

SECTION 01561

ENVIRONMENTAL PROTECTION

PART 1 GENERAL

The work covered by this section consists of furnishing all labor, materials and equipment and performing all work required for the prevention of environmental pollution during, and as the result of, construction operations under this contract except for those measures set forth in the Technical Provisions of these specifications. For the purpose of this specification, environmental pollution is defined as the presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life or affect other species of importance to man. The control of environmental pollution requires consideration of air, water, and land.

1.1 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Facility Plan; G AR.

Location of storage and service facilities.

Temporary Plan; G AR.

Temporary excavation and embankments.

1.2 APPLICABLE REGULATIONS

The Contractor and his subcontractors in the performance of this contract, shall comply with all applicable Federal, State, and local laws and regulations concerning environmental pollution control and abatement in effect on the date of this solicitation, as well as the specific requirements stated elsewhere in the contract specifications.

1.3 NOTIFICATION

The Contracting Officer will notify the Contractor of any non-compliance with the foregoing provisions and the action to be taken. The Contractor shall, after receipt of such notice, immediately take corrective action. If the Contractor fails or refuses to comply promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of time lost due to any such stop order shall be made the subject of a claim for extension of time or for excess costs or damages by the Contractor unless it is later determined that the Contractor was in compliance.

1.4 SUBCONTRACTORS

Compliance with the provisions of this section by subcontractors will be the responsibility of the Contractor.

1.5 PROTECTION OF WATER RESOURCES

The Contractor shall not pollute streams, lakes or reservoirs with fuels, oils, bitumens, calcium chloride, acid construction wastes or other harmful materials. All work under this contract shall be performed in such a manner that objectionable conditions will not be created in streams through or adjacent to the project areas.

1.6 EROSION AND SEDIMENTATION CONTROL

The Contractor shall accomplish the erosion and sedimentation control in accordance with the contract drawings. At the outset of construction, the Contractor will be required to accept by signature a Transferee/Co-Permitte Form. The acceptance of the Transferee/Co-Permitte Form places responsibility on the Contractor to fully adhere to the provisions of the General Permit for erosion and sedimentation control and stormwater management.

1.7 BURNING

Burning will not be allowed.

1.8 DUST CONTROL

The Contractor shall maintain all work areas free from dust which would contribute to air pollution. Approved temporary methods of stabilization consisting of sprinkling, chemical treatment, light bituminous treatment or similar methods will be permitted to control dust. Sprinkling, where used, must be repeated at such intervals as to keep all parts of the disturbed area at least damp at all times. Dust control shall be performed as the work proceeds and whenever a dust nuisance or hazard occurs.

1.9 PROTECTION OF LAND RESOURCES

1.9.1 General

It is intended that the land resources within the project boundaries and outside the limits of permanent work performed under this contract be preserved in their present condition or be restored to a condition after completion of construction that will appear to be natural and not detract from the appearance of the project. Insofar as possible, the Contractor shall confine his construction activities to areas defined by the plans and specifications or to be cleared for other operations. The following additional requirements are intended to supplement and clarify the requirements of the CONTRACT CLAUSES:

1.9.2 Protection of Trees Retained

1.9.2.1 Contractors Responsibility

The Contractor shall be responsible for the protection of the tops, trunks

and roots of all existing trees that are to be retained on the site. Protection shall be maintained until all work in the vicinity has been completed and shall not be removed without the consent of the Contracting Officer. If the Contracting Officer finds that the protective devices are insufficient, additional protection devices shall be installed.

1.9.2.2 Stockpiling

Heavy equipment, vehicular traffic, or stockpiling of any materials shall not be permitted within the drip line of trees to be retained.

1.9.2.3 Storage

No toxic materials shall be stored within 100 feet from the drip line of trees to be retained.

1.9.2.4 Confined Area

Except for areas shown on the plans to be cleared, the Contractor shall not deface, injure, or destroy trees or shrubs, nor remove or cut them without special authority. Existing near by trees shall not be used for anchorage unless specifically authorized by the Contracting Officer. Where such special emergency use is permitted, the Contractor shall first adequately protect the trunk with a sufficient thickness of burlap over which softwood cleats shall be tied.

1.9.2.5 Tree Defacing

No protective devices, signs, utility boxes or other objects shall be nailed to trees to be retained on the site.

1.9.3 Restoration of landscape damage

Any trees or other landscape feature scarred or damaged by the Contractor's operations shall be restored as nearly as possible to its original condition at the Contractor's expense. The Contracting Officer will decide what method of restoration shall be used, and whether damaged trees shall be treated and healed or removed and disposed of. All trimming or pruning shall be performed in an approved manner by experienced workmen with saws or pruning shears. Tree trimming with axes will not be permitted. Where tree climbing is necessary, the use of climbing spurs will not be permitted. Trees that are to remain, either within or outside established clearing limits, that are subsequently damaged by the Contractor and are beyond saving in the opinion of the Contracting Officer, shall be immediately removed and replaced with a nursery-grown tree of the same species. Replacement trees shall measure no less than 2 inches in diameter at 6 inches above the ground level.

1.9.4 Location of Storage and Services Facilities

The location on project property of the Contractor's storage and service facilities, required temporarily in the performance of the work, shall be upon cleared portions of the job site or areas to be cleared. The preservation of the landscape shall be an imperative consideration in the selection of all sites and in the construction of buildings. A facility plan showing storage and service facilities shall be submitted for approval to the Contracting Officer. Where buildings or platforms are constructed on slopes, the Contracting Officer may require cribbing to be used to obtain level foundations. Benching or leveling of earth may not be

allowed, depending on the location of the proposed facility.

1.9.5 Temporary Excavation and Embankment

If the Contractor proposes to construct temporary roads, embankments or excavations for plant and/or work areas, he shall submit a temporary plan for approval prior to scheduled start of such temporary work.

1.10 MEASUREMENT AND PAYMENT

Except as noted in paragraph, PERFORMANCE AND PAYMENT BOND REIMBURSEMENT above, no separate measurement and payment will be made for the work performed in this Section 01561 ENVIRONMENTAL PROTECTION specified herein and all costs in connection therewith shall be considered a subsidiary obligation of the Contractor, and shall be included in the overall cost of the work.

PART 2 PRODUCT

NOT APPLICABLE

PART 3 EXECUTION

NOT APPLICABLE

-- End of Section --

SECTION 01720

AS-BUILT DRAWINGS - CADD

PART 1 GENERAL

1.1 Preparation

This section covers the preparation of as-built drawings complete, as a requirement of this contract. The terms "drawings," "contract drawings," "drawing files," and "final as-built drawings" refer to a set of computer-aided design and drafting (CADD) contract drawings in electronic file format which are to be used for as-built drawings.

1.2 PROGRESS MARKED UP AS-BUILT PRINTS

The Contractor shall revise one set of paper prints to show the as-built conditions during the prosecution of the project. These as-built marked prints shall be kept current and available on the jobsite at all times. All changes from the contract plans which are made in the work or additional information which might be uncovered in the course of construction shall be accurately and neatly recorded as they occur by means of details and notes. The as-built marked prints will be jointly reviewed for accuracy and completeness by the Contracting Officer and a responsible representative of the construction Contractor prior to submission of each monthly pay estimate. If the Contractor fails to maintain the as-built drawings as specified herein, the Contracting Officer will deduct from the monthly progress payment an amount representing the estimated cost of maintaining the as-built drawings and will continue the monthly deduction of the 10% retainage even after 50% completion of the contract. This monthly deduction will continue until an agreement can be reached between the Contracting Officer and a representative of the Contractor regarding the accuracy and completeness of updated drawings. The prints shall show the following information, but not be limited thereto:

1.2.1 Location and Description

The location and description of any utility lines or other installations of any kind or description known to exist within the construction area. The location includes dimensions to permanent features.

1.2.2 Location and Dimensions

The location and dimensions of any changes within the building or structure.

1.2.3 Corrections

Correct grade, cross section, or alignment of roads, earthwork, structures or utilities if any changes were made from contract plans.

Correct elevations if changes were made in site grading.

1.2.4 Changes

Changes in details of design or additional information obtained from

working drawings specified to be prepared and/or furnished by the Contractor; including but not limited to fabrication, erection, installation plans and placing details, pipe sizes, insulation material, dimensions of equipment foundations, etc.

The topography, invert elevations and grades of all drainage installed or affected as a part of the project construction.

All changes or modifications which result from the final inspection.

1.2.5 Options

Where contract drawings or specifications present options, only the option selected for construction shall be shown on the as-built prints.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-11 Closeout Submittals

Progress Prints; G AR.

Preparation of two copies of as-builts from the Contractor to the Contracting Officer for review and approval.

Final Requirements; G AR.

CADD Files.

Shall consist of three sets of completed as-built contract drawings on separate media consisting of both CADD files (compatible with the Using Agency/Sponsor's system on electronic storage media identical to that supplied by the Government) and a CALS Type 1, Group 4, Raster Image File of each contract drawing.

Receipt by the Contractor of the approved marked as-built prints.

1.4 PRELIMINARY SUBMITTAL

At the time of final inspection, the Contractor shall prepare two copies of the progress as-built prints and these shall be delivered to the Contracting Officer for review and approval. These as-built marked prints shall be neat, legible and accurate. The review by Government personnel will be expedited to the maximum extent possible. Upon approval, one copy of the as-built marked prints will be returned to the Contractor for use in preparation of final as-built drawings. If upon review, the as-built marked prints are found to contain errors and/or omissions, they shall be returned to the Contractor for corrections. The Contractor shall complete the corrections and return the as-built marked prints to the Contracting Officer within ten (10) calendar days.

1.5 DRAWING PREPARATION

1.5.1 As-Built Drawings Approval

Upon approval of the as-built prints submitted, the Contractor will be furnished by the Government one set of contract drawings, with all amendments incorporated, to be used for as-built drawings. These contract drawings will be furnished on CD-ROM. These drawings shall be modified as may be necessary to correctly show all the features of the project as it has been constructed by bringing the contract set into agreement with the approved as-built prints, adding such additional drawings as may be necessary. These drawings are part of the permanent records of this project and the Contractor shall be responsible for the protection and safety thereof until returned to the Contracting Officer. Any drawings damaged or lost by the Contractor shall be satisfactorily replaced by the Contractor at no expense to the Government.

1.5.2 Proficient Personnel

Only personnel proficient in the preparation of engineering CADD drawings to standards satisfactory and acceptable to the Government shall be employed to modify the contract drawings or prepare additional new drawings. All additions and corrections to the contract drawings shall be equal in quality to that of the originals. Line work, line weights, lettering, layering conventions, and symbols shall be the same as the original line work, line weights, lettering, layering conventions, and symbols. If additional drawings are required, they shall be prepared using the specified electronic file format applying the same guidance specified for original drawings. The title block and drawing border to be used for any new as-built drawings shall be identical to that used on the contract drawings. All additions and corrections to the contract drawings shall be accomplished using CADD media files supplied by the Government. These contract drawings will already be compatible with the Sponsor's system when received by the Contractor. The Sponsor uses AutoCAD Release 2000 CADD software system. The media files will be supplied on ISO 9660 Format CD-ROM. The Contractor is responsible for providing all program files and hardware necessary to prepare as-built drawings. The Contracting Officer will review all as-built drawings for accuracy and the Contractor shall make all required corrections, changes, additions, and deletions.

1.5.3 Final Revisions

When final revisions have been completed, the cover sheet drawing shall show the wording "RECORD DRAWING AS-BUILT" followed by the name of the General Contractor in letters at least 3/16 inch high. All other contract drawings shall be marked either "As-Built" drawing denoting no revisions on the sheet or "Revised As-Built" denoting one or more revisions. All original contract drawings shall be dated in the revision block (see ATTACHMENT 1 located at the end of this section).

1.6 FINAL REQUIREMENTS

After receipt by the Contractor of the approved marked as-built prints and the original contract drawing files the Contractor will, within 30 days make the final as-built submittal. The submittal shall consist of the following:

a) Three sets of the as-built contract drawings on separate CD's (ISO 9660 Format CD-ROM) consisting of the updated CADD files and a CALS Type 1 Group 4 Raster Image File of each contract drawing plate. The CALS files

shall be exact duplicates of the full sized plots of the completed as-built contract drawings at a resolution of 400 dpi and may be either plotted to CALS files directly from the CADD files, or scanned to file from the prints.

b) One set of full size and four sets of half size paper prints (plots) of the completed as-built contract drawings.

c) The return of the approved marked as-built prints.

They shall be complete in all details and identical in form and function to the contract drawing files supplied by the Government. Any translations or adjustments necessary to accomplish this is the responsibility of the Contractor. The Government reserves the right to reject any drawing files it deems incompatible with its CADD system. All paper prints, drawing files and storage media submitted will become the property of the Government upon final approval. Failure to submit as-built drawing files and marked prints as required herein shall be cause for withholding any payment due the Contractor under this contract. Approval and acceptance of final as-built drawings shall be accomplished before final payment is made to the Contractor.

1.7 PAYMENT

No separate payment will be made for the as-built drawings required under this contract, and all costs in connection therewith shall be considered a subsidiary obligation of the Contractor.

PART 2 PRODUCT

NOT APPLICABLE

PART 3 EXECUTION

NOT APPLICABLE

-- End of Section --

RECORD DRAWING AS-BUILT

XYZ CONTRACTOR

Plate: 1

Sheet Number: T-1

FT. INDIANTOWN GAP PENNSYLVANIA

EQUIPMENT CONSENTRATION SITE

COVER SHEET

U.S. ARMY ENGINEER DISTRICT, BALTIMORE CORPS OF ENGINEERS BALTIMORE, MARYLAND	Designed by:	Date: JAN 2001	Rev.
	Dwn by: / Ckd by:	Design file no.	
A/E FIRM/CONTRACTOR 3 LINES PROVIDED OR LOGO	Reviewed by:	Drawing Number: F-XXX-XX-XX	
	Submitted by: Chief, Branch	File name: FILENAME Plot date: 12/25/00 Plot scale: 1=1	

Mark	Description	Date	Appr.	Mark	Description	Date	Appr.
	AS-BUILT	10 SEP 02					
3	REVISED SECTION A-A AND C-C	5 JAN 01	A.E. D.P.				
2	REVISED PER AMENDMENT NO. 2	30 DEC 00	A.E. D.P.				
1	REVISED PER AMENDMENT NO. 1	25 DEC 00	A.E. D.P.				

ATTACHMENT 1

SECTION 02231

CLEARING AND GRUBBING

PART 1 GENERAL

1.1 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-03 Product Data

Materials Other Than Salable Timber

Written permission to dispose of such products on private property shall be filed with the Contracting Officer.

PART 2 PRODUCTS

PART 3 EXECUTION

3.1 PROTECTION

3.1.1 Roads and Walks

Keep roads and walks free of dirt and debris at all times.

3.1.2 Trees, Shrubs, and Existing Facilities

Trees and vegetation to be left standing shall be protected from damage incident to clearing, grubbing, and construction operations by the erection of barriers or by such other means as the circumstances require.

3.1.3 Utility Lines

Protect existing utility lines that are indicated to remain from damage. Notify the Contracting Officer immediately of damage to or an encounter with an unknown existing utility line. The Contractor shall be responsible for the repairs of damage to existing utility lines that are indicated or made known to the Contractor prior to start of clearing and grubbing operations. When utility lines are encountered within the area of operations, the Contractor shall notify the Contracting Officer in ample time to minimize interruption of the service.

3.2 CLEARING

Clearing shall consist of the felling, trimming, and cutting of trees into sections and the satisfactory disposal of the trees and other vegetation designated for removal, including downed timber, snags, brush, and rubbish occurring within the areas to be cleared. Trees, stumps, roots, brush, and other vegetation in areas to be cleared shall be cut off flush with or

below the original ground surface, except such trees and vegetation as may be indicated or directed to be left standing. Trees designated to be left standing within the cleared areas shall be trimmed of dead branches 1-1/2 inches or more in diameter and shall be trimmed of all branches to the heights indicated or directed. Limbs and branches to be trimmed shall be neatly cut close to the bole of the tree or main branches.

3.3 TREE REMOVAL

Where indicated or directed, trees and stumps shall be removed from areas outside those areas designated for clearing and grubbing. This work shall include the felling of such trees and the removal of their stumps and roots as specified in paragraph GRUBBING. Trees shall be disposed of as specified in paragraph DISPOSAL OF MATERIALS.

3.4 PRUNING

Prune trees designated to be left standing within the cleared areas of dead branches 1 1/2 inches or more in diameter; and trim branches to heights and in a manner as indicated. Neatly cut limbs and branches to be trimmed close to the bole of the tree or main branches.

3.5 GRUBBING

Grubbing shall consist of the removal and disposal of stumps, roots larger than 3 inches in diameter, and matted roots from the designated grubbing areas. Material to be grubbed, together with logs and other organic or metallic debris not suitable for foundation purposes, shall be removed to a depth of not less than 18 inches below the original surface level of the ground in areas indicated to be grubbed and in areas indicated on drawings. Depressions made by grubbing shall be filled with suitable material and compacted to make the surface conform with the original adjacent surface of the ground.

3.6 DISPOSAL OF MATERIALS

3.6.1 Nonsaleable Materials

Logs, stumps, roots, brush, rotten wood, and other refuse from the clearing and grubbing operations shall be disposed of outside the limits of Government-controlled land at the Contractor's responsibility, except when otherwise directed in writing. Such directive will state the conditions covering the disposal of such products and will also state the areas in which they may be placed.

-- End of Section --

SECTION 02542

CURED-IN-PLACE PIPE (CIPP)

PART 1 GENERAL

It is the intent of this specification to provide for the reconstruction of pipelines and conduits by the installation of a resin-impregnated flexible tube, which is tightly formed to the original conduit. The resin is cured using either hot water under hydrostatic pressure or steam pressure within the tube. The Cured-In-Place Pipe (CIPP) will be continuous and tight fitting.

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced and which are made a part hereof by such reference and shall be the latest edition and revision thereof. In case of conflicting requirements between this specification and these referenced documents, this specification will govern. The publications are referred to within the text by the basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM F 1216	(Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube)
ASTM F 1743	(Rehabilitation of Existing Pipelines and Conduits by Pulled-in-Place Installation of Cured-in-Place Thermosetting Resin Pipe (CIPP))
ASTM D 790	(Test Methods for Flexural Properties of Un-reinforced and Reinforced Plastics and Electrical Insulating Materials)

1.2 STRUCTURAL REQUIREMENTS

a. The CIPP shall be designed as per ASTM F 1216, Appendix X.1. The CIPP design shall assume no bonding to the original pipe wall.

b. The Contractor must have performed long-term testing for flexural creep of the CIPP pipe material installed by his Company. Such testing results are to be used to determine the long-term, time dependent flexural modulus to be utilized in the product design. This is a performance test of the materials (Tube and Resin) and general workmanship of the installation and curing. A percentage of the instantaneous flexural modulus value (as measured by ASTM D 790 testing) will be used in design calculations for external buckling. The percentage, or the long-term creep retention value utilized, will be verified by this testing. Retention values exceeding 50% of the short-term test results shall not be applied unless substantiated by qualified third party test data to the Government's satisfaction. The materials utilized for the

contracted project shall be of a quality equal to or better than the materials used in the long-term test with respect to the initial flexural modulus used in the CIPP design.

c. The Enhancement Factor 'K' to be used in 'Partially Deteriorated' Design conditions shall be assigned a value of 7. Application of Enhancement (K) Factors in excess of 7 shall be substantiated through independent test data to the satisfaction of the Government.

d. The layers of the cured CIPP shall be uniformly bonded. It shall not be possible to separate any two layers with a probe or point of a knife blade so that the layers separate cleanly or the probe or knife blade moves freely between the layers. If the layers separate during field sample testing, new samples will be required to be obtained from the installed pipe. Any reoccurrence may cause rejection of the work.

e. The cured pipe material (CIPP) shall conform to the following structural properties, as tested per ASTM D 790: Modulus of Elasticity 250,000 psi; Flexural Stress 4,500 psi; minimum per ASTM F 1216.

f. The required structural CIPP wall thickness shall be based as a minimum, on the physical properties in subparagraph 1.3(e) and in accordance with the design equations in the Appendix X1. Design Considerations of ASTM F 1216, and the following design parameters:

1. Design Safety Factor (typically used value) = 2.0
2. Retention Factor for Long-Term Flexural Modulus to be used in Design = 1% - 60% - (As determined by long-term tests described in subparagraph 1.3(b) and approved by the Government)
3. Ovality* (calculated from (X1.1of ASTM F 1216) = %
4. Enhancement Factor, K = See subparagraph 1.3(c)
5. Groundwater Depth (above invert of existing pipe)* = ft.
6. Soil Depth (above crown of existing pipe)* = ft.

* Denotes information which shall be provided after inspection.

g. Refer to the attached dimension ratio table for specific pipe section requirements, based on the pipe condition, depth, ovality, etc. as computed for the conditions shown, using ASTM F 1216 design equations.

h. Any layers of the tube that are not saturated with resin prior to insertion into the existing pipe shall not be included in the structural CIPP wall thickness computation.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only or as otherwise designated. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Products and Installers seeking approval must meet all of the following criteria to be deemed Commercially Acceptable:

Product Requirement; G AR

For a Product to be considered Commercially Proven, a minimum of 1,000,000 linear feet or 4,000 manhole-to-manhole line sections of successful wastewater collection system installations in the U.S. must be documented to the satisfaction of the Government to assure commercial viability.

Mamifacturer/Installer Qualification Requirements;; G AR

For an Installer to be considered as Commercially Proven, the Installer must satisfy all insurance, financial, and bonding requirements of the Government, and must have had at least 5 (five) years active experience in the commercial installation. In addition, the Installer must have successfully installed at least 50,000 feet of the product bid in wastewater or stormwater systems. Acceptable documentation of these minimum installations must be submitted to the Government.

Bypass Plan;; G AR

The Contractor shall develop and submit for approval a plan to provide for the flow around the section or sections of pipe designated for repair, as described in subparagraph 3.1(a).

SD-04 Samples

Samples; G AR

CIPP samples shall be prepared and physical properties tested in accordance with ASTM F 1216 or ASTM F 1743, Section 8, using either method proposed. The flexural properties must meet or exceed the values listed in Table 1 of the applicable ASTM.

Wall thickness of samples shall be determined as described in paragraph 8.1.6 of ASTM F 1743. The minimum wall thickness at any point shall not be less than 87½% of the minimum design wall thickness as calculated in subparagraph 1.3(f) of this document.

SD-05 Design Data

Structural Calculations; G ED

Calculations shall be provided to demonstrate the CIPP meets or exceeds all of the requirements of paragraph 1.3.

SD-06 Test Reports

Test Reports; G AR

Sewer rehabilitation products submitted for approval must provide third party test results supporting the structural performance (short-term and long-term) of the product and such data shall be satisfactory to the Government. Test samples shall be prepared so as to simulate installation methods and trauma of the product. No product will be approved without independent third party testing verification.

Testing Requirements

a. Chemical Resistance: - The CIPP shall meet the chemical resistance requirements of ASTM F 1216, Appendix X2. CIPP samples for testing shall be of tube and resin system similar to that proposed for actual construction. It is required that CIPP samples with and without plastic coating meet these chemical-testing requirements.

b. Hydraulic Capacity: - Overall, the hydraulic cross-section shall be maintained as large as possible. The CIPP shall have a minimum of the full flow capacity of the original pipe before rehabilitation. Calculated capacities may be derived using a commonly accepted roughness coefficient for the existing pipe material taking into consideration its age and condition.

c. CIPP Field Samples: - The Contractor shall submit test results from field installations in the USA of the same resin system and tube materials as proposed for the actual installation. These test results must verify that the CIPP physical properties specified in subparagraph 1.3(e) have been achieved in previous field applications.

SD-07 Certificates

Quality Management System; G AR

Both the rehabilitation manufacturing and installation processes shall operate under a quality management system which is third-party certified to ISO 9000 or other recognized organization standards. Proof of certification shall be required for approval.

PART 2 PRODUCTS

2.1 TUBE

Tube shall conform to the respective specifications and other requirements specified below.

2.1.1 Sub Title

a. The sewn Tube shall consist of one or more layers of absorbent non-woven felt fabric and meet the requirements of ASTM F 1216, Section 5.1 or ASTM F 1743, Section 5.2.1. The tube shall be constructed to withstand installation pressures, have sufficient strength to bridge missing pipe, and stretch to fit irregular pipe sections.

b. The wet out Tube shall have a relatively uniform thickness that when compressed at installation pressures will equal or exceed the calculated minimum design thickness.

c. The Tube shall be manufactured to a size that when installed will tightly fit the internal circumference and length of the original pipe. Allowance shall be made for circumferential stretching during inversion. Overlapped layers of felt in longitudinal seams that cause lumps in the final product shall not be utilized.

d. The outside layer of the Tube shall be coated with an impermeable, flexible membrane that will contain the resin and all the resin

impregnation (wet out) procedure to be monitored.

e. The Tube shall be homogeneous across the entire wall thickness containing no intermediate or encapsulated elastomeric layers. No material shall be included in the Tube that may cause delamination in the cured CIPP. No dry or unsaturated layers shall be evident.

f. The wall color of the interior pipe surface of CIPP after installation shall be a relatively light reflective color so that a clear detailed examination with closed circuit television inspection equipment may be made.

g. Seams in the Tube shall be stronger than the non-seamed felt material.

h. The Tube shall be marked for distance at regular intervals along its entire length, not to exceed 5 ft. Such markings shall include the Manufacturers name or identifying symbol.

2.2 RESIN

The resin system shall be a corrosion resistant polyester, vinyl ester, or epoxy system including all required catalysts, initiators or hardeners that when cured within the tube create a composite that satisfies the requirements of ASTM F 1216 and ASTM F 1743, the physical properties herein, and those which are to be utilized in the design of the CIPP for this project. The resin shall produce a CIPP that will comply with the structural and chemical resistance requirements of this specification.

PART 3 EXECUTION

3.1 INSTALLATION RESPONSIBILITIES FOR INCIDENTAL ITEMS

3.1.1 Responsibility

It shall be the responsibility of the Government to locate and designate all manhole access points open and accessible for the work, and provide rights-of-access to these locations.

3.1.2 Cleaning of Sewer Lines

The Contractor shall remove all internal debris out of the sewer line that will interfere with the installation of CIPP.

3.1.3 Bypassing

The Contractor shall provide a bypass plan for the flow around the section or sections of pipe designated for repair. Plugging the line at an existing upstream manhole and pumping the flow into a downstream manhole or adjacent system shall make the bypass. The pump(s) and bypass line(s) shall be of adequate capacity to accommodate the flow. The bypass plan shall be submitted to the Government for approval.

3.1.4 Inspection of Pipelines

Inspection of pipelines shall be performed by experienced personnel trained in locating breaks, obstacles and service connections using close circuit television (CCTV) inspection techniques. The pipeline interior shall be carefully inspected to determine the location of any conditions that may

prevent proper installation of CIPP. These shall be noted and corrected. A videotape and suitable written log for each line section shall be submitted to the Government prior to installation of the CIPP.

3.1.5 Line Obstructions

It shall be the responsibility of the Contractor to clear the line of obstructions such as solids and roots that will prevent the insertion of CIPP.

3.2 INSTALLATION

CIPP installation shall be in accordance with ASTM F1216, Section 7, or ASTM F 1743, Section 6, with the following modifications:

3.2.1 Resin Impregnation

The quantity of resin used for tube impregnation shall be sufficient to fill the volume of air voids in the tube with additional allowances for polymerization shrinkage and the loss of resin during installation through cracks and irregularities in the original pipe wall.

If a vacuum impregnation process is used, the point of vacuum shall be no further than 25-feet from the point of initial resin introduction. After vacuum in the tube is established, a vacuum point shall be no further than 75-feet from the leading edge of the resin. The leading edge of the resin slug shall be as near to perpendicular to the longitudinal axis of the tube as possible. A roller system shall be used to uniformly distribute the resin throughout the tube. If the Installer uses an alternate method of resin impregnation, the method must produce the equivalent results. Any alternate resin impregnation method must be documented to the Government's satisfaction that the saturation of the CIPP is sufficient.

3.2.2 Tube Insertion

The wet out tube shall be positioned in the pipeline using either inversion or a pull-in method. If pulled into place, a power winch should be utilized and care should be exercised not to damage the tube as a result of pull-in friction. The tube should be pulled-in or inverted through an existing manhole or approved access point and fully extend to the next designated manhole or termination point.

3.2.3 Temperature Gauges

Temperature gauges shall be placed between the tube and the host pipe's invert position to monitor the temperatures during the cure cycle.

3.2.4 Curing

Curing shall be accomplished by utilizing hot water under hydrostatic pressure or steam pressure in accordance with the manufacturer's recommended cure schedule.

3.3 INSPECTION

Visual inspection of the CIPP shall be in accordance with ASTM F 1743, Section 8.6.

3.4 CLEAN-UP

Upon acceptance of the installation work and testing, the Contractor shall restore the project area affected by the operations to a condition at least equal to that existing prior to the work.

3.5 TABLE

CIPP WALL THICKNESS

PARTIALLY DETERIOTATED DESIGN (PD)

		Required DR (D/t)			
		Ei=250,000 psi		Ei=400,000 psi	
		Groundwater Depth			
Ovality	Range of Depth to invert (feet)	50% Depth	Full Depth	50% Depth	Full Depth
2%*	4 - 8	78	62	92	73
	8 - 12	69	55	80	64
	12 - 16	62	50	73	58
	16 - 20	58	46	68	54
	20 - 24	55	44	64	51
5%	4 - 8	72	57	84	67
	8 - 12	63	50	73	58
	12 - 16	57	46	67	53
	16 - 20	53	42	62	49
	20 - 24	50	40	58	47
8%	4 - 8	66	52	77	61
	8 - 12	58	46	67	54
	12 - 16	52	42	61	49
	16 - 20	49	39	57	45
	20 - 24	46	37	54	43

PD wall thickness varies with the height of the groundwater above the invert of the host pipe. The table assumes the height of the groundwater equal to half or full depth to the pipe invert. The table represents CIPP pipe wall thickness for a host pipe range of 8 to 48 inches. This is a guideline only. Specific calculations should refer to ASTM F-1216, Appendix X.1.

Design Parameters:
Poisson's Ratio = 0.3
Factor of Safety = 2.0 (typically used value)
Enhancement Factor = 7
DR = Dimension Ratio = Diameter / thickness Þ t = D / DR
Effective reduction of Ei modulus to approximate effects of creep = 50 %
Ovality % = 100 x (Mean Dia. - Minimum Dia.) / Mean Dia.
* 2% ovality is typically assumed when the host pipe measurements have not been field verified.

-- End of Section --

SECTION 02921A

SEEDING

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 602	(1995a) Agricultural Liming Materials
ASTM D 4972	(1995a) pH of Soils
ASTM D 5268	(1992; R 1996) Topsoil Used for Landscaping Purposes

U.S. DEPARTMENT OF AGRICULTURE (USDA)

AMS Seed Act	(1995) Federal Seed Act Regulations Part 201

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-03 Product Data

Equipment;
Surface Erosion Control Material;
Chemical Treatment Material

Manufacturer's literature including physical characteristics, application and installation instructions for equipment, surface erosion control material and chemical treatment material.

A listing of equipment to be used for the seeding operation.

Delivery

Delivery schedule.

Finished Grade and Topsoil

Finished grade status.

Topsoil

Availability of topsoil from the stripping and stock piling operation.

Quantity Check

Bag count or bulk weight measurements of material used compared with area covered to determine the application rate and quantity installed.

Seed Establishment Period

Calendar time period for the seed establishment period. When there is more than one seed establishment period, the boundaries of the seeded area covered for each period shall be described.

Maintenance Record

Maintenance work performed, area repaired or reinstalled, diagnosis for unsatisfactory stand of grass plants.

SD-04 Samples

Delivered Topsoil

Samples taken from several locations at the source.

Soil Amendments

A 10 pound sample.

Mulch

A 10 pound sample.

SD-06 Test Reports

Equipment Calibration

Certification of calibration tests conducted on the equipment used in the seeding operation.

Soil Test

Certified reports of inspections and laboratory tests, prepared by an independent testing agency, including analysis and interpretation of test results. Each report shall be properly identified. Test methods used and compliance with recognized test standards shall be described.

SD-07 Certificates

Seed; G|AR
Topsoil; G|AR
pH Adjuster; G|AR
Fertilizer; G|AR
Organic Material; G|AR
Soil Conditioner; G|AR
Mulch; G|AR

Prior to the delivery of materials, certificates of compliance attesting that materials meet the specified requirements. Certified copies of the material certificates shall include the following:

a. Seed. Classification, botanical name, common name, percent pure live seed, minimum percent germination and hard seed, maximum percent weed seed content, and date tested.

b. Topsoil. Particle size, pH, organic matter content, textural class, soluble salts, chemical and mechanical analyses.

c. pH Adjuster. Calcium carbonate equivalent and sieve analysis.

d. Fertilizer. Chemical analysis and composition percent.

e. Organic Material: Composition and source.

f. Soil Conditioner: Composition and source.

g. Mulch: Composition and source.

1.3 SOURCE INSPECTION

The source of delivered topsoil shall be subject to inspection.

1.4 DELIVERY, INSPECTION, STORAGE, AND HANDLING

1.4.1 Delivery

A delivery schedule shall be provided at least 10 calendar days prior to the first day of delivery.

1.4.1.1 Delivered Topsoil

Prior to the delivery of any topsoil, its availability shall be verified in paragraph TOPSOIL. A soil test shall be provided for topsoil delivered to the site.

1.4.1.2 Soil Amendments

Soil amendments shall be delivered to the site in the original, unopened containers bearing the manufacturer's chemical analysis. In lieu of containers, soil amendments may be furnished in bulk. A chemical analysis shall be provided for bulk deliveries.

1.4.2 Inspection

Seed shall be inspected upon arrival at the job site for conformity to species and quality. Seed that is wet, moldy, or bears a test date five months or older, shall be rejected. Other materials shall be inspected for compliance with specified requirements. The following shall be rejected: open soil amendment containers or wet soil amendments; topsoil that contains slag, cinders, stones, lumps of soil, sticks, roots, trash or other material over a minimum 1-1/2 inch diameter; and topsoil that contains viable plants and plant parts. Unacceptable materials shall be removed from the job site.

1.4.3 Storage

Materials shall be stored in designated areas. Seed, lime, and fertilizer shall be stored in cool, dry locations away from contaminants. Chemical treatment material shall be stored according to manufacturer's instructions and not with seeding operation materials.

1.4.4 Handling

Except for bulk deliveries, materials shall not be dropped or dumped from vehicles.

1.4.5 Time Limitation

Hydroseeding time limitation for holding seed in the slurry shall be a maximum 24 hours.

PART 2 PRODUCTS

2.1 SEED

2.1.1 Seed Classification

State-certified seed of the latest season's crop shall be provided in original sealed packages bearing the producer's guaranteed analysis for percentages of mixture, purity, germination, hard seed, weed seed content, and inert material. Labels shall be in conformance with AMS Seed Act and applicable state seed laws.

2.1.2 Permanent Seed Species and Mixtures

Permanent seed species and mixtures shall be proportioned by weight as follows:

Botanical Name	Common Name	Mixture Percent by Weight	Percent Pure Live Seed
		SEED	
Festuca Longifolia	Hard Fescue Reliant or Improved Variety from latest Agronomy Mimeo	4.5lbs./1,000 Sq. Ft.	83% Min.
Lolium Perenne	Perennial Rye	5lbs./1,000 Sq. Ft.	83% Min.

2.1.3 Temporary Seed Species

Temporary seed species for surface erosion control or overseeding shall be as follows:

Common Name	Rate	Percent Pure Live Seed
Winter Rye	140lbs./acre	83% min.

2.1.4 Quality

Weed seed shall be a maximum 1 percent by weight of the total mixture.

2.1.5 Seed Mixing

The mixing of seed may be done by the seed supplier prior to delivery, or on site as directed.

2.1.6 Substitutions

Substitutions will not be allowed without written request and approval from the Contracting Officer.

2.2 TOPSOIL

Topsoil shall be as defined in ASTM D 5268. When available, the topsoil shall be the existing surface soil stripped and stockpiled onsite. When additional topsoil is required beyond the available topsoil from the stripping operation, topsoil shall be delivered and amended as recommended by the soil test for the seed specified. Topsoil shall be free from slag, cinders, stones, lumps of soil, sticks, roots, trash or other material over a minimum 1-1/2 inch diameter. Topsoil shall be free from viable plants and plant parts.

2.3 SOIL AMENDMENTS

Soil amendments shall consist of pH adjuster, fertilizer, organic material and soil conditioners meeting the following requirements. Vermiculite shall not be used.

2.3.1 pH Adjuster

The pH adjuster shall be an agricultural liming material in accordance with ASTM C 602. These materials may be burnt lime, hydrated lime, ground limestone, sulfur, or shells. The pH adjuster shall be used to create a favorable soil pH for the plant material specified.

2.3.1.1 Limestone

Limestone material shall contain a minimum calcium carbonate equivalent of 80 percent. Gradation: A minimum 95 percent shall pass through a No. 8 sieve and a minimum 55 percent shall pass through a No. 60 sieve. To raise soil pH, ground limestone shall be used.

2.3.1.2 Hydrated Lime

Hydrated lime shall contain a minimum calcium carbonate equivalent of 110 percent. Gradation: A minimum 100 percent shall pass through a No. 8 sieve and a minimum 97 percent shall pass through a No. 60 sieve.

2.3.1.3 Burnt Lime

Burnt lime shall contain a minimum calcium carbonate equivalent of 140 percent. Gradation: A minimum 95 percent shall pass through a No. 8 sieve and a minimum 35 percent shall pass through a No. 60 sieve.

2.3.2 Fertilizer

Mixture ratio shall be as recommended by the soil test. Fertilizer shall be controlled release commercial grade, free flowing, uniform in composition, and consist of a nitrogen-phosphorus-potassium ratio. The fertilizer shall be derived from sulphur coated urea, urea formaldehyde, plastic or polymer coated pills, or isobutylenediurea (IBDU). Fertilizer shall be balanced with the inclusion of trace minerals and micro-nutrients.

2.3.3 Nitrogen Carrier Fertilizer

Mixture ration shall be as recommended by the soil test. Nitrogen carrier fertilizer shall be commercial grade, free flowing, and uniform in composition. The fertilizer may be a liquid nitrogen solution.

2.3.4 Organic Material

Organic material shall consist of either bonemeal, rotted manure, decomposed wood derivatives, recycled compost, or worm castings.

2.3.4.1 Bonemeal

Bonemeal shall be finely ground, steamed bone product containing from 2 to 4 percent nitrogen and 16 to 40 percent phosphoric acid.

2.3.4.2 Rotted Manure

Rotted manure shall be unleached horse, chicken or cattle manure containing a maximum 25 percent by volume of straw, sawdust, or other bedding materials. It shall contain no chemicals or ingredients harmful to plants. The manure shall be heat treated to kill weed seeds and be free of stones, sticks, and soil.

2.3.4.3 Decomposed Wood Derivatives

Decomposed wood derivatives shall be ground bark, sawdust, yard trimmings, or other wood waste material that is free of stones, sticks, soil, and toxic substances harmful to plants, and is fully composted or stabilized with nitrogen.

2.3.4.4 Recycled Compost

Compost shall be a well decomposed, stable, weed free organic matter source. Compost shall be derived from biosolids (treated sewage sludge) or yard trimmings. The compost shall possess no objectionable odors and shall not resemble the raw material from which it was derived. The material shall not contain substances toxic to plants. Gradation: The compost material shall pass through a 3/8 inch screen, possess a pH of 5.5 to 8.0, and have a moisture content between 35-55 percent by weight. The material shall not contain more than 1 percent by weight of man-made foreign matter. Compost shall be cleaned of plastic materials larger than 2 inches in length.

2.3.4.5 Worm Castings

Worm castings shall be screened from worms and food source, and shall be commercially packaged.

2.3.5 Soil Conditioner

Soil conditioner shall be sand, calcined clay, or gypsum for use singly or in combination to meet the requirements of the soil test.

2.3.5.1 Sand

Sand shall be clean and free of toxic materials. Gradation: A minimum 95 percent by weight shall pass a No. 10 sieve and a minimum 10 percent by weight shall pass a No. 16 sieve. Greensand shall be balanced with the inclusion of trace minerals and nutrients.

2.3.5.2 Calcined Clay

Calcined clay shall be granular particles produced from montmorillonite clay calcined to a minimum temperature of 1200 degrees F. Gradation: A minimum 90 percent shall pass a No. 8 sieve; a minimum 99 percent shall be retained on a No. 60 sieve; and a maximum 2 percent shall pass a No. 100 sieve. Bulk density: A maximum 40 pounds per cubic foot.

2.3.5.3 Gypsum

Gypsum shall be commercially packaged, free flowing, and a minimum 95 percent calcium sulfate by volume.

2.4 MULCH

Mulch shall be free from weeds, mold, and other deleterious materials. Mulch materials shall be native to the region.

2.4.1 Straw

Straw shall be stalks from oats, wheat, rye, barley, or rice, furnished in air-dry condition and with a consistency for placing with commercial mulch-blowing equipment.

2.4.2 Hay

Hay shall be native hay, sudan-grass hay, broomsedge hay, or other herbaceous mowings, furnished in an air-dry condition suitable for placing with commercial mulch-blowing equipment.

2.4.3 Wood Cellulose Fiber

Wood cellulose fiber shall not contain any growth or germination-inhibiting factors and shall be dyed an appropriate color to facilitate placement during application. Composition on air-dry weight basis: 9 to 15 percent moisture, pH range from 4.5 to 6.0.

2.4.4 Paper Fiber

Paper fiber mulch shall be recycled news print that is shredded for the purpose of mulching seed.

2.5 WATER

Water shall be the responsibility of the Contractor, unless otherwise noted. Water shall not contain elements toxic to plant life.

2.6 SURFACE EROSION CONTROL MATERIAL

Surface erosion control material shall conform to the following:

2.6.1 Surface Erosion Control Blanket

Blanket shall be machine produced mat of wood excelsior formed from a web of interlocking wood fibers; covered on one side with either knitted straw blanket-like mat construction; covered with biodegradable plastic mesh; or interwoven biodegradable thread, plastic netting, or twisted kraft paper cord netting.

2.6.2 Surface Erosion Control Fabric

Fabric shall be knitted construction of polypropylene yarn with uniform mesh openings 3/4 to 1 inch square with strips of biodegradable paper. Filler paper strips shall have a minimum life of 6 months.

2.6.3 Surface Erosion Control Net

Net shall be heavy, twisted jute mesh, weighing approximately 1.22 pounds per linear yard and 4 feet wide with mesh openings of approximately 1 inch square.

2.6.4 Surface Erosion Control Chemicals

Chemicals shall be high-polymer synthetic resin or cold-water emulsion of selected petroleum resins.

2.6.5 Hydrophilic Colloids

Hydrophilic colloids shall be physiologically harmless to plant and animal life without phytotoxic agents. Colloids shall be naturally occurring, silicate powder based, and shall form a water insoluble membrane after curing. Colloids shall resist mold growth.

2.6.6 Erosion Control Material Anchors

Erosion control anchors shall be as recommended by the manufacturer.

PART 3 EXECUTION

3.1 INSTALLING SEED TIME AND CONDITIONS

3.1.1 Seeding Time

Seed shall be installed from MAR 01 to MAY 30 for spring establishment and from SEP 01 to NOV 01 for fall establishment.

3.1.2 Seeding Conditions

Seeding operations shall be performed only during periods when beneficial results can be obtained. When drought, excessive moisture, or other unsatisfactory conditions prevail, the work shall be stopped when directed. When special conditions warrant a variance to the seeding operations,

proposed alternate times shall be submitted for approval.

3.1.3 Equipment Calibration

Immediately prior to the commencement of seeding operations, calibration tests shall be conducted on the equipment to be used. These tests shall confirm that the equipment is operating within the manufacturer's specifications and will meet the specified criteria. The equipment shall be calibrated a minimum of once every day during the operation. The calibration test results shall be provided within 1 week of testing.

3.1.4 Soil Test

Delivered topsoil, existing soil in smooth graded areas, and stockpiled topsoil shall be tested in accordance with ASTM D 5268 and ASTM D 4972 for determining the particle size, pH, organic matter content, textural class, chemical analysis, soluble salts analysis, and mechanical analysis. Sample collection on site shall be random over the entire site. Sample collection for stockpiled topsoil shall be at different levels in the stockpile. The soil shall be free from debris, noxious weeds, toxic substances, or other materials harmful to plant growth. The test shall determine the quantities and type of soil amendments required to meet local growing conditions for the seed species specified.

3.2 SITE PREPARATION

3.2.1 Finished Grade and Topsoil

The Contractor shall verify that finished grades are as indicated on drawings, and the placing of topsoil, smooth grading, and compaction have been completed prior to the commencement of the seeding operation.

3.2.2 Application of Soil Amendments

3.2.2.1 Applying pH Adjuster

The pH adjuster shall be applied as recommended by the soil test. The pH adjuster shall be incorporated into the soil to a 4-6 inch depth or may be incorporated as part of the tillage operation.

3.2.2.2 Applying Fertilizer

The fertilizer shall be applied as recommended by the soil test. Fertilizer shall be incorporated into the soil to a 4-6 inch depth or may be incorporated as part of the tillage or hydroseeding operation.

3.2.2.3 Applying Soil Conditioner

The soil conditioner shall be as recommended by the soil test. The soil conditioner shall be spread uniformly over the soil a 1 inch depth and thoroughly incorporated by tillage into the soil to a maximum 4-6 inch depth.

3.2.3 Tillage

Soil on slopes up to a maximum 2.5-horizontal-to-1-vertical shall be tilled to a minimum 4 inch depth. Rototillers shall be used where soil conditions and length of slope permit. Drainage patterns shall be maintained. Areas compacted by construction operations shall be completely

pulverized by tillage. Soil used for repair of surface erosion or grade deficiencies shall conform to topsoil requirements. The pH adjuster, fertilizer, and soil conditioner may be applied during this procedure.

3.2.4 Prepared Surface

3.2.4.1 Preparation

The prepared surface shall be a maximum 1 inch below the adjoining grade of any surfaced area. New surfaces shall be blended to existing areas. The prepared surface shall be completed with a light raking to remove debris.

3.2.4.2 Turf Area Debris

Debris and stones over a minimum 5/8 inch in any dimension shall be removed from the surface.

3.2.4.3 Protection

Areas with the prepared surface shall be protected from compaction or damage by vehicular or pedestrian traffic and surface erosion.

3.3 INSTALLATION

Prior to installing seed, any previously prepared surface compacted or damaged shall be reworked to meet the requirements of paragraph SITE PREPARATION. Seeding operations shall not take place when the wind velocity will prevent uniform seed distribution.

3.3.1 Installing Seed

Seeding method shall be Broadcast Seeding or Hydroseeding. Seeding procedure shall ensure even coverage. Gravity feed applicators, which drop seed directly from a hopper onto the prepared soil, shall not be used because of the difficulty in achieving even coverage, unless otherwise approved.

3.3.1.1 Broadcast Seeding

Seed shall be uniformly broadcast at the rate specified in Paragraph: "Permanent Seed Species and Mixtures" using broadcast seeders. Half the total rate of seed application shall be broadcast in 1 direction, with the remainder of the seed rate broadcast at 90 degrees from the first direction. Seed shall be covered a maximum 1/4 inch depth by disk harrow, steel mat drag, cultipacker, or other approved device.

3.3.1.2 Rolling

The entire area shall be firmed with a roller not exceeding 90 pounds per foot roller width. Slopes over a maximum 3-horizontal-to-1 vertical shall not be rolled. Areas seeded with seed drills equipped with rollers shall not be rolled.

3.3.2 Hydroseeding

Seed shall be mixed to ensure broadcast at the rate specified in Paragraph: "Permanent Seed Species and Mixtures". Seed and fertilizer shall be added to water and thoroughly mixed to meet the rates specified. The time period

for the seed to be held in the slurry shall be a maximum 24 hours. Wood cellulose fiber mulch and tackifier shall be added at the rates recommended by the manufacturer after the seed, fertilizer, and water have been thoroughly mixed to produce a homogeneous slurry. Slurry shall be uniformly applied under pressure over the entire area. The hydroseeded area shall not be rolled.

3.3.3 Mulching

3.3.3.1 Hay or Straw Mulch

Hay or straw mulch shall be spread uniformly at the rate of 3 tons per acre. Mulch shall be spread by hand, blower-type mulch spreader, or other approved method. Mulching shall be started on the windward side of relatively flat areas or on the upper part of steep slopes, and continued uniformly until the area is covered. The mulch shall not be bunched or clumped. Sunlight shall not be completely excluded from penetrating to the ground surface. All areas installed with seed shall be mulched on the same day as the seeding. Mulch shall be anchored immediately following spreading.

3.3.3.2 Mechanical Anchor

Mechanical anchor shall be a V-type-wheel land packer; a scalloped-disk land packer designed to force mulch into the soil surface; or other suitable equipment.

3.3.3.3 Non-Asphaltic Tackifier

Hydrophilic colloid shall be applied at the rate recommended by the manufacturer, using hydraulic equipment suitable for thoroughly mixing with water. A uniform mixture shall be applied over the area.

3.3.3.4 Wood Cellulose Fiber, Paper Fiber, and Recycled Paper

Wood cellulose fiber, paper fiber, or recycled paper shall be applied as part of the hydroseeding operation. The mulch shall be mixed and applied in accordance with the manufacturer's recommendations.

3.3.4 Watering Seed

Watering shall be started immediately after completing the seeding of an area. Water shall be applied to supplement rainfall at a rate sufficient to ensure moist soil conditions to a minimum 1 inch depth. Run-off and puddling shall be prevented. Watering trucks shall not be driven over turf areas, unless otherwise directed. Watering of other adjacent areas or plant material shall be prevented.

3.4 SURFACE EROSION CONTROL

3.4.1 Surface Erosion Control Material

Where indicated or as directed, surface erosion control material shall be installed in accordance with manufacturer's instructions. Placement of the material shall be accomplished without damage to installed material or without deviation to finished grade.

3.4.2 Temporary Seeding

The application rate shall be as specified in Paragraph: "Temporary Seed Species." When directed during contract delays affecting the seeding operation or when a quick cover is required to prevent surface erosion, the areas designated shall be seeded in accordance with temporary seed species listed under Paragraph SEED.

3.4.2.1 Soil Amendments

When soil amendments have not been applied to the area, the quantity of 1/2 of the required soil amendments shall be applied and the area tilled in accordance with paragraph SITE PREPARATION. The area shall be watered in accordance with paragraph Watering Seed.

3.4.2.2 Remaining Soil Amendments

The remaining soil amendments shall be applied in accordance with the paragraph Tillage when the surface is prepared for installing seed.

3.5 QUANTITY CHECK

For materials provided in bags, the empty bags shall be retained for recording the amount used. For materials provided in bulk, the weight certificates shall be retained as a record of the amount used. The amount of material used shall be compared with the total area covered to determine the rate of application used. Differences between the quantity applied and the quantity specified shall be adjusted as directed.

3.6 RESTORATION AND CLEAN UP

3.6.1 Restoration

Existing turf areas, pavements, and facilities that have been damaged from the seeding operation shall be restored to original condition at Contractor's expense.

3.6.2 Clean Up

Excess and waste material shall be removed from the seeded areas and shall be disposed offsite. Adjacent paved areas shall be cleaned.

3.7 PROTECTION OF INSTALLED AREAS

Immediately upon completion of the seeding operation in an area, the area shall be protected against traffic or other use by erecting barricades and providing signage as required, or as directed.

3.8 SEED ESTABLISHMENT PERIOD

3.8.1 Commencement

The seed establishment period to obtain a healthy stand of grass plants shall begin on the first day of seeding work under this contract and end 3 months after the last day of the seeding operation or the last day of this contract whichever is latest. Written calendar time period shall be furnished for the seed establishment period. When there is more than 1 seed establishment period, the boundaries of the seeded area covered for each period shall be described. The seed establishment period shall be modified for inclement weather, shut down periods, or for separate completion dates of areas.

3.8.2 Satisfactory Stand of Grass Plants

Grass plants shall be evaluated for species and health after the grass plants have been mowed three times, bare spots are less than 2 percent of turf, and weeds are less than 10 percent of turf.

3.8.2.1 Turf Area

A satisfactory stand of grass plants from the seeding operation for a turf area shall be a minimum 100 grass plants per square foot. Bare spots shall be a maximum 3 inches square. The total bare spots shall be a maximum 2 percent of the total seeded area.

3.8.3 Maintenance During Establishment Period

Maintenance of the seeded areas shall include eradicating weeds, insects and diseases; protecting embankments and ditches from surface erosion; maintaining erosion control materials and mulch; protecting installed areas from traffic; mowing; watering; and post-fertilization.

3.8.3.1 Mowing

a. Turf Areas: Turf areas shall be mowed to a minimum 3 inch height when the turf is a maximum 5 inches high. Clippings shall be removed when the amount cut prevents sunlight from reaching the ground surface.

3.8.3.2 Post-Fertilization

The fertilizer shall be applied as recommended by the soil test. A maximum 1/2 pound per 1000 square feet of actual available nitrogen shall be provided to the grass plants. The application shall be timed prior to the advent of winter dormancy and shall be made without burning the installed grass plants.

3.8.3.3 Repair or Reinstall

Unsatisfactory stand of grass plants and mulch shall be repaired or reinstalled, and eroded areas shall be repaired in accordance with paragraph SITE PREPARATION.

3.8.3.4 Maintenance Record

A record of each site visit shall be furnished, describing the maintenance work performed; areas repaired or reinstalled; and diagnosis for unsatisfactory stand of grass plants.

3.9 FINAL ACCEPTANCE

3.9.1 Preliminary Inspection

Prior to completion of the Turf Establishment Period, a preliminary inspection shall be held by the Contracting Officer. Time for the inspection shall be established in writing. The acceptability of the turf in accordance with the Turf Establishment Period shall be determined. An unacceptable stand of turf shall be repaired as soon as turfing conditions permit.

3.9.2 Final Inspection

A final inspection shall be held by the Contracting Officer to determine that deficiencies noted in the preliminary inspection have been corrected. Time for the inspection shall be established in writing.

-- End of Section --

SECTION 02982

RESEALING OF CULVERT JOINTS

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 719	Adhesion and Cohesion of Elastomeric Joint Sealants Under Cyclic Movement
ASTM C 794	Adhesion-in-Peel of Elastomeric Joint Sealants
ASTM C 920	Elastomeric Joint Sealants
ASTM D 412	(1997) Vulcanized Rubber and Thermoplastic Rubbers and Thermoplastic Elastomers - Tension
ASTM D 624	(1995) TearStrength of Conventional VulcanizedRubber and Thermoplastic Elastomers
ASTM D 2240	(1990; R 1997) Extrusion Rate and Application Life of Elastomeric Sealants

U.S. GENERAL SERVICES ADMINISTRATION (GSA)

FS TT-S-00227E	Sealing Compound: Elastomeric Type, Multi-Component (for Caulking, Sealing, and Glazing in Buildings and Other Structures.

1.2 SUBMITTALS

Submit the following in accordance with Section 01330, "Submittal Procedures."

SD-03 Product Data

Joint sealant; G|ED

Submit catalog cuts, specifications, material Safety Data Sheets and other information documenting conformance to contract requirements.

SD-04 Samples

Separating tape

Joint backer rod

Joint sealant

Furnish for testing a five gallon sample of each joint seal with associated primer to the Contracting Officer a minimum of 60 days prior to its use on the job. Each container shall be factory sealed and must contain a factory applied label showing the following information:

Name of sealant

Identification of component, or primer

Specification number and type

Manufacturer's name

Manufacturer's lot and batch number

Date of Manufacture (month and year)

Shelf life retest date (month and year)

List of hazardous components

Quantity of material in container (volume)

Storage instructions

Instructions for use

SD-06 Test Reports

Joint sealant

SD-07 Certificates

Equipment list

SD-08 Manufacturer's Instructions

Joint sealant

Instructions shall include, but not be limited to: storage requirements, ambient temperature and humidity ranges, and moisture condition of joints for successful installation; requirements for preparation of joints; safe heating temperature; mixing instructions; installation equipment and procedures; application and disposal requirements; compatibility of sealant with filler material; curing requirements; and restrictions to be adhered to in order to reduce hazards to personnel or to the environment. Submit instructions at least 30 days prior to use.

1.3 DELIVERY, STORAGE, AND HANDLING

All materials must be delivered in original, unopened containers with the manufacturer's name, labels, product identification, and batch numbers. Damaged material must be removed from the site immediately. Store all

materials off the ground and protect from rain, freezing or excessive heat until ready for use. Condition the specified product as recommended by the manufacturer.

1.4 ENVIRONMENTAL REQUIREMENTS

Minimum application temperature 40°F (5°C) and rising.

1.5 Protection

Precautions should be taken to avoid damage to any surface near the work zone due to mixing and handling of the specified coating.

1.6 EQUIPMENT

Submit a equipment list and description of the equipment to be used and a statement from the supplier of the joint sealant that the proposed equipment is acceptable for installing the specified sealant. Equipment for mixing and installing joint seals shall be in accordance with the instructions provided by the joint seal manufacturer. Furnish equipment, tools, and accessories necessary to clean existing joints and install liquid joint sealants. Maintain machines, tools, and other equipment in proper working condition.

1.6.1 Joint Cleaning Equipment

1.6.1.1 Sandblasting Equipment

Commercial type capable of removing residual sealer, oil, or other foreign material. Equipment shall include an air compressor, hose and nozzles of proper size, shape, and opening. Attach an adjustable guide that will hold the nozzles aligned with the joint to effectively and efficiently clean without damage to concrete edges. Adjust height, angle of inclination, or size of nozzles to sandblast joint faces and not bottom of joint.

1.6.1.2 Air Compressor

Portable air compressor capable of operating the sandblasting equipment and capable of blowing out sand, water, dust adhering to sidewalls of concrete, and other objectionable materials from the joints. The compressor shall furnish air at a pressure not less than 90 psi and a minimum rate of 150 cubic feet of air per minute at the nozzles and free of oil.

1.6.1.3 Vacuum Sweeper

Self-propelled, vacuum pickup sweeper capable of completely removing loose sand, water, joint material, and debris from concrete surface.

1.6.1.4 Hand Tools

When approved, hand tools such as brooms and chisels may be used in small areas for removing old sealant from joints and repairing or cleaning the joint faces.

1.6.2 Joint Sealing Equipment

Joint sealing equipment shall be of a type required by the joint seal manufacturer's installation instructions. Equipment shall be capable of installing sealant to the depths, widths and tolerances indicated. When

malfunctions are noted, joint sealing shall not proceed until they are corrected.

1.7 SAFETY PROVISIONS

In accordance with the provisions of the contract regarding "Accident Prevention," the Contractor shall take appropriate measures to control worker exposure to toxic substances during the work. Provide personnel protective equipment as required. Material Safety Data Sheets (Department of Labor Form OSHA-20 or comparable form) shall be available on the site. Sandblasting operations shall comply with abrasive blasting requirements in Section 06.H of EM385-1-1.

PART 2 PRODUCTS

2.1 MATERIALS

2.1.1 Joint Sealant

2.1.1.1 Two Component Cold-Applied Sealing Compound

The joint sealant shall be a two-component, non-sag, polyurethane-base material and meet the requirements shown below. It shall be applicable in horizontal, vertical, and overhead joints. The sealant shall be principally a chemical cure to form an elastomeric substance. The color shall be introduced through a "Color-pak" system or be pretinted from the manufacturer.

A. Properties of the mixed polyurethane sealant:
1. Pot Life: 3-4 hours
2. Initial Cure (Tack-Free Time): 6-8 hours
3. Consistency: non-sag/self-leveling
4. Color: more than 300 architectural colors available through color matching system

B. Properties of the cured polyurethane sealant:
1. Tensile Properties (ASTM D 412) at 14 days Non-sag
a. Tensile Strength at break: minimum 120 psi
b. Tensile Elongation: minimum 500%
c. Modulus of Elasticity - 100% Elongation 75 psi, min.
2. Shore A Hardness 9 ASTM D 2240) at 14 days:
a. Non-sag: 35 +/-5
3. Tear Strength (ASTM D 624) at 14 days: non-sag 45 lbs./in
4. Adhesion in Peel (FS TT-S-00227E,ASTM C 794) at 21 days
a. Concrete: 25-lb. min. 0% Adhesion Loss
b. Aluminum: 30-lb. min. 0% Adhesion Loss
c. Glass: 30-lb. min. 0% Adhesion Loss
5. Service Range: -40° to 170°F (-40° to 77°C)
6. The sealant shall conform to Federal Specification FS TT-S-00227E, Type I and II, Class A.
7. The sealant shall conform to ASTM C 920ASTM C-920, Type M, Grade P or NS, Class 25.
8. The sealant shall be capable of withstanding ±50% movement of the average joint width when tested in accordance to the durability bond test of Federal Specification FS TT-S-00227E and ASTM C 719.
9. The sealant shall be non-staining.
10. Final Cure: 3 days max.

Note: Tests are performed with material and curing conditions at 71°-75°F

and 45-55% relative humidity.

2.1.2 Primers

Any primers, as required, recommended by the manufacturer of the specified product, approved by the Contracting Officer.

2.1.3 Bond Breakers

2.1.3.1 Blocking Media

Compressible, nonshrinkable, nonreactive with joint sealant and nonabsorption type such as plastic backer rod, free of oils or bitumens. Blocking media shall be consistent with the joint seal manufacturer's installation instructions and be at least 25 percent larger in diameter than the width of the cleaned and re-faced joints as shown.

2.1.3.2 Separating Tape

Polyethylene or polyester tape, 3 mil minimum thickness, or masking tape, nonreactive, nonabsorptive, adhesive-back tape, width equal to width of cleaned and refaced joints as indicated. Separating tape shall be consistent with the joint seal manufacturer's installation instructions.

PART 3 EXECUTION

3.1 JOINT PREPARATION

The joint and adjacent substrate must be clean, dry, sound and free of surface contaminants. Remove all traces of the old sealant, dust, laitance, grease, oils, curing compounds, form release agents and foreign particles by mechanical means, i.e. - sandblasting, etc., as approved by the Contracting Officer. Blow joint free of dust using compressed air line equipped with an oil trap.

3.1.1 Bond Breaker

At the time the joints receive the final cleaning and are dry, install bond breaker material as indicated.

3.1.1.1 Blocking Media (Backer Rod)

Plug or seal off the inner portion of the joint by installing the specified blocking media as indicated.

3.1.1.2 Separating Tape

Insert the specified tape.

3.1.2 Disposal of Debris

Sweep the surface to remove excess joint material, dirt, water, sand, and other debris by vacuum sweepers or hand brooms. Remove the debris immediately to an area approved by the Contracting Officer.

3.2 PREPARATION OF SEALANT

Mixing of the polyurethane sealant shall be in accordance with manufacturer's recommendations.

3.3 INSTALLATION OF SEALANT

3.3.1 Sealing the Joints

Prime all substrates as required based upon the recommendations of the manufacturer of the specified product, when field testing indicates need, and when the joints will be subject to immersion after cure, as approved by the Contracting Officer. Install approved backer rod and seperating tape in all joints subject to thermal movement to prevent three-sided bonding and to set the depth of the sealant at a maximum of 1/2 in., measured at the center point of the joint width. Approval of the backer rod and seperating tape shall be made by the Contracting Officer. Joints shall be masked to prevent discoloration or application on unwanted areas, as directed by the Contracting Officer. If masking tape is used, it shall not be removed before tooling, yet must be removed before the initial cure of the sealant. Do not apply the masking tape until just prior to the sealant application. Install non-sag sealant into prepared joints. Load the sealant into a caulking gun. Place the nozzle of the gun, either hand or air or electric powered, into the bottom of the joint and fill entire joint. Keep the tip of the nozzle in the sealant, continue with a steady flow of sealant preceeding the nozzle to avoid air entrapment. Avoid overlapping the sealant to eliminate the entrapment of air. Tool, as required, to properly fill the joint. Adhere to all limitations and cautions for the polyurethane sealant in the manufacturer's printed literature.

3.3.2 Cleaning

The uncured polyurethane sealant can be cleaned with an approved solvent. The cured polyurethane sealant can only be removed mechanically. Leave work area in a neat, clean condition without evidence of spillovers onto adjacent areas.

3.4 FIELD QUALITY CONTROL

3.4.1 Sampling Joint Seal

Obtain a one gallon sample of the joint seal on the project from material used. Store samples according to joint seal manufacturer's instructions. Retain samples until final acceptance of the work by the Contracting Officer.

3.4.2 Joints

Inspect and approve joints which have been cleaned and have backer rods and seperating tape installed prior to sealing.

3.4.3 Joint Sealer

Inspect installed joint seals for conformance to contract requirements, joint seal manufacturer's instructions, and the test section. Obtain approval for each joint seal installation.

3.5 ACCEPTANCE

Reject joint sealer that fails to cure properly, or fails to bond to joint walls, or reverts to the uncured state, or fails in cohesion, or shows excessive air voids, blisters, surface defects, swelling, or other

deficiencies, or is not properly recessed within indicated tolerances. Remove rejected sealer and reclean and reseal joints in accordance with the specification. Perform removal and reseal work promptly by and at the expense of the Contractor.

-- End of Section --

SECTION 03100A

STRUCTURAL CONCRETE FORMWORK

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

ACI INTERNATIONAL (ACI)

ACI 347R (1994) Guide to Formwork for Concrete

AMERICAN HARDBOARD ASSOCIATION (AHA)

AHA A135.4 (1995) Basic Hardboard

U.S. DEPARTMENT OF COMMERCE (DOC)

PS-1 (1996) Voluntary Product Standard - Construction and Industrial Plywood

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Formwork

Drawings showing details of formwork, including dimensions of fiber voids, joints, supports, studding and shoring, and sequence of form and shoring removal.

SD-03 Product Data

Design

Design analysis and calculations for form design and methodology used in the design.

Form Materials

Manufacturer's data including literature describing form materials, accessories, and form releasing agents.

Form Releasing Agents

Manufacturer's recommendation on method and rate of application of form releasing agents.

1.3 DESIGN

Formwork shall be designed in accordance with methodology of ACI 347R for anticipated loads, lateral pressures, and stresses. Forms shall be capable of producing a surface which meets the requirements of the class of finish specified in Section 03300 CAST-IN-PLACE STRUCTURAL CONCRETE. Forms shall be capable of withstanding the pressures resulting from placement and vibration of concrete.

PART 2 PRODUCTS

2.1 FORM MATERIALS

2.1.1 Forms For Class A Finish

Forms for Class A finished surfaces shall be plywood panels conforming to PS-1, Grade B-B concrete form panels, Class I or II. Other form materials or liners may be used provided the smoothness and appearance of concrete produced will be equivalent to that produced by the plywood concrete form panels. Forms for round columns shall be the prefabricated seamless type.

2.1.2 Forms For Class C Finish

Forms for Class C finished surfaces shall be shiplap lumber; plywood conforming to PS-1, Grade B-B concrete form panels, Class I or II; tempered concrete form hardboard conforming to AHA A135.4; other approved concrete form material; or steel, except that steel lining on wood sheathing shall not be used. Forms for round columns may have one vertical seam.

2.1.3 Form Ties

Form ties shall be factory-fabricated metal ties, shall be of the removable or internal disconnecting or snap-off type, and shall be of a design that will not permit form deflection and will not spall concrete upon removal. Solid backing shall be provided for each tie. Except where removable tie rods are used, ties shall not leave holes in the concrete surface less than 1/4 inch nor more than 1 inch deep and not more than 1 inchin diameter. Removable tie rods shall be not more than 1-1/2 inches in diameter.

2.1.4 Form Releasing Agents

Form releasing agents shall be used on all forms and shall be commercial formulations that will not bond with, stain or adversely affect concrete surfaces. Agents shall not impair subsequent treatment of concrete surfaces depending upon bond or adhesion nor impede the wetting of surfaces to be cured with water or curing compounds.

PART 3 EXECUTION

3.1 INSTALLATION

3.1.1 Formwork

Forms shall be mortar tight, properly aligned and adequately supported to produce concrete surfaces meeting the surface requirements specified in Section 03300 CAST-IN-PLACE STRUCTURAL CONCRETE and conforming to construction tolerance given in TABLE 1. Where concrete surfaces are to have a Class A finish, joints in form panels shall be arranged as approved. Where forms for continuous surfaces are placed in successive units, the forms shall fit over the completed surface to obtain accurate alignment of the surface and to prevent leakage of mortar. Forms shall not be reused if there is any evidence of surface wear and tear or defects which would impair the quality of the surface. Surfaces of forms to be reused shall be cleaned of mortar from previous concreting and of all other foreign material before reuse. Form ties that are to be completely withdrawn shall be coated with a nonstaining bond breaker.

3.2 CHAMFERING

Except as otherwise shown, external corners that will be exposed shall be chamfered, 1-inch by 1-inch by moldings placed in the forms.

3.3 COATING

Forms for Class A finished surfaces shall be coated with a form releasing agent before the form or reinforcement is placed in final position. The coating shall be used as recommended in the manufacturer's printed or written instructions. Forms for Class C finished surfaces may be wet with water in lieu of coating immediately before placing concrete, except that in cold weather with probable freezing temperatures, coating shall be mandatory. Surplus coating on form surfaces and coating on reinforcing steel and construction joints shall be removed before placing concrete.

3.4 REMOVAL OF FORMS

Forms shall be removed preventing injury to the concrete and ensuring the complete safety of the structure. Formwork for columns, walls, side of beams and other parts not supporting the weight of concrete may be removed when the concrete has attained sufficient strength to resist damage from the removal operation but not before at least 24 hours has elapsed since concrete placement. Supporting forms and shores shall not be removed from beams, floors and walls until the structural units are strong enough to carry their own weight and any other construction or natural loads. Supporting forms or shores shall not be removed before the concrete strength has reached 70 percent of design strength, as determined by field cured cylinders or other approved methods. This strength shall be demonstrated by job-cured test specimens, and by a structural analysis considering the proposed loads in relation to these test strengths and the strength of forming and shoring system. The job-cured test specimens for form removal purposes shall be provided in numbers as directed and shall be in addition to those required for concrete quality control. The specimens shall be removed from molds at the age of 24 hours and shall receive, insofar as possible, the same curing and protection as the structures they represent.

TABLE 1

TOLERANCES FOR FORMED SURFACES

1.	Variations from the plumb:	In any 10 feet of length ---------- 1/4 inch

TABLE 1

TOLERANCES FOR FORMED SURFACES

a.	In the lines and surfaces of foundations, walls and in arises	Maximum for entire length ---------- 1/2 inch
b.	For reveals, joint grooves, and other conspicuous lines	Maximum for entire length---------- 1/2 inch
2.	Variation from the level or from the elevations indicated on the drawings:	In any 10 feet of length ----------1/4 inch
a.	In horizontal reveals, horizontal grooves, and other conspicuous lines	Maximum for entire length---------- 1/2 inch
3.	Variation in the locations of post recess, sleeves, floor openings, and wall opening	Minus ---------- 1/4 inch Plus ---------- 1/4 inch
4.	Variation in cross sectional thickness of slabs and walls	Minus ---------- 1/4 inch Plus ---------- 1/4 inch
5.	Footings:	
a.	Variation of dimensions in plan	Minus ---------- 1/2 inch Plus ---------- 2 inches when formed or plus 3 inches when placed against unformed excavation
b.	Misplacement of eccentricity	2 percent of the footing width in the direction of misplacement but not more than 2 inches
c.	Reduction in thickness of specified thickness	Minus ---------- 1 percent
8.	Variation in steps:	Riser ---------- 1/8 inch
a.	In a flight of stairs	Tread ---------- 1/4 inch
b.	In consecutive steps	Riser ---------- 1/16 inch Tread ---------- 1/8 inch

-- End of Section --

SECTION 03151A

EXPANSION, CONTRACTION AND CONSTRUCTION JOINTS IN CONCRETE FOR CIVIL WORKS

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 920	(1998) Elastomeric Joint Sealants
ASTM D 1751	(1999) Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types)
ASTM D 1752	(1984; R 1996el) Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-04 Samples

Field Molded Sealants and Primer

One gallon of field-molded sealant and one quart of primer (when primer is recommended by the sealant manufacturer) shall be provided for testing.

SD-06 Test Reports

Premolded Expansion Joint Filler Strips

Certified manufacturer's test reports shall be provided for premolded expansion joint filler strips, compression seals and lubricant, and metallic waterstops to verify compliance with applicable specification.

PART 2 PRODUCTS

2.1 MATERIALS

2.1.1 Premolded Expansion Joint Filler Strips

Premolded expansion joint filler strips shall conform to ASTM D 1751 or ASTM D 1752, Type I, or resin impregnated fiberboard conforming to the physical requirements of ASTM D 994 and ASTM D 1751.

2.1.2 Joint Seals and Sealants

2.1.2.1 Field Molded Sealants and Primer

Field molded sealants and primer shall conform to ASTM C 920, Type M, Grade NS, Class 25, use NT for vertical joints and Type M, Grade P, Class 25, use T for horizontal joints. Bond breaker material shall be polyethylene tape, coated paper, metal foil or similar type materials. The back-up material shall be compressible, nonshrink, nonreactive with sealant, and nonabsorptive material type such as extruded butyl or polychloroprene foam rubber.

2.2 TESTS, INSPECTIONS, AND VERIFICATIONS

2.2.1 Materials Tests

2.2.1.1 Field-Molded Sealants

Samples of sealant and primer, when use of primer is recommended by the manufacturer, as required in paragraph FIELD MOLDED SEALANTS AND PRIMER, shall be tested by and at the expense of the Government for compliance with paragraph FIELD MOLDED SEALANTS AND PRIMER. If the sample fails to meet specification requirements, new samples shall be provided and the cost of retesting will be deducted from payments due the Contractor.

PART 3 EXECUTION

3.1 INSTALLATION

Joint locations and details, including materials and methods of installation of joint fillers shall be as specified, as shown, and as directed.

3.1.1 Expansion Joints

Premolded filler strips shall have oiled wood strips secured to the top thereof and shall be accurately positioned and secured against displacement to clean, smooth concrete surfaces. The wood strips shall be slightly tapered, dressed and of the size required to install filler strips at the desired level below the finished concrete surface and to form the groove for the joint sealant or seals to the size shown. Material used to secure premolded fillers and wood strips to concrete shall not harm the concrete and shall be compatible with the joint sealant or seals. The wood strips shall not be removed until after the concrete curing period. The groove shall be thoroughly cleaned of all laitance, curing compound, foreign materials, protrusions of hardened concrete and any dust which shall be blown out of the groove with oil-free compressed air.

3.1.1.1 Joints With Field-Molded Sealant

Joints shall not be sealed when the sealant, air or concrete temperature is less than 40 degrees F. Immediately prior to installation of field molded sealants, the joint shall be cleaned of all debris and further cleaned

using water, chemical solvents or other means as recommended by the sealant manufacturer. The joints shall be dry prior to filling with sealant. Bond breaker and back-up material shall be installed where required. Joints shall be primed and filled flush with joint sealant in accordance with the manufacturer's recommendations.

3.1.2 Contraction Joints

Joints requiring a bond breaker shall be coated with curing compound or with bituminous paint. Waterstops shall be protected during application of bond breaking material to prevent them from being coated.

-- End of Section --

SECTION 03201

STEEL BARS AND WELDED WIRE FABRIC FOR CONCRETE REINFORCEMENT FOR CIVIL WORKS

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

ACI INTERNATIONAL (ACI)

ACI 315	(1999) Details and Detailing of Concrete Reinforcement
ACI 318/318R	(1999) Building Code Requirements for Structural Concrete and Commentary

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 184/A 184M	(1996) Fabricated Deformed Steel Bar Mats for Concrete Reinforcement
ASTM A 185	(1997) Steel Welded Wire Fabric, Plain, for Concrete Reinforcement
ASTM A 370	(1997a) Mechanical Testing of Steel Products
ASTM A 615/A 615M	(2000) Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
ASTM A 767/A 767M	(2000) Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement

AMERICAN WELDING SOCIETY (AWS)

AWS D1.4	(1998) Structural Welding Code - Reinforcing Steel

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Fabrication and Placement; G|ED

The Contractor shall submit shop drawings which include: reinforcement steel placement drawings; reinforcement steel

schedules showing quantity, size, shape, dimensions, weight per foot, total weights and bending details; and details of bar supports showing types, sizes, spacing and sequence.

SD-06 Test Reports

Material; G|AR
Tests, Inspections, and Verifications

Certified tests reports of reinforcement steel showing that the steel complies with the applicable specifications shall be furnished for each steel shipment and identified with specific lots prior to placement. Three copies of the heat analyses shall be provided for each lot of steel furnished and the Contractor shall certify that the steel conforms to the heat analyses.

PART 2 PRODUCTS

2.1 MATERIALS

Materials shall conform to the following requirements.

2.1.1 Steel Bars

Steel bars shall comply with the requirements of ASTM A 615/A 615M, deformed, of the grades, sizes and lengths shown.

2.1.1.1 Zinc-Coated (Galvanized) Bars

Zinc-coated (galvanized) bars shall comply with the requirements of ASTM A 767/A 767M, Class 1 coating, galvanized after fabrication.

2.1.1.2 Fabricated Bar Mats

Fabricated bar mats shall comply with the requirements of ASTM A 184/A 184M, clipped or welded mats, bar sizes and spacings as shown.

2.1.2 Steel Welded Wire Fabric

Steel welded wire fabric shall comply with the requirements of ASTM A 185 wire sizes and spacings as shown. For wire with a specified yield strength (fy) exceeding 60,000 psi, fy shall be the stress corresponding to a strain of 0.35 percent.

2.1.3 Accessories

2.1.3.1 Bar Supports

Bar supports shall comply with the requirements of ACI 315. Supports for bars in concrete with formed surfaces exposed to view or to be painted shall be plastic-coated wire, stainless steel or precast concrete supports. Precast concrete supports shall be wedged-shaped, not larger than 3-1/2 by 3-1/2 inches, of thickness equal to that indicated for concrete cover and have an embedded hooked tie-wire for anchorage. Bar supports used in precast concrete with formed surfaces exposed to view shall be the same quality, texture and color as the finish surfaces.

2.1.3.2 Wire Ties

Wire ties shall be 16 gage or heavier black annealed wire. Ties for epoxy-coated bars shall be vinyl-coated or epoxy-coated. Ties for zinc-coated bars shall be zinc-coated.

2.2 TESTS, INSPECTIONS, AND VERIFICATIONS

The Contractor shall have material tests required by applicable standards and specified performed by an approved laboratory and certified to demonstrate that the materials are in conformance with the specifications. Tests, inspections, and verifications shall be performed and certified at the Contractor's expense.

2.2.1 Reinforcement Steel Tests

Mechanical testing of steel shall be in accordance with ASTM A 370 except as otherwise specified or required by the material specifications. Tension tests shall be performed on full cross-section specimens using a gage length that spans the extremities of specimens with welds or sleeves included. Chemical analyses of steel heats shall show the percentages of carbon, phosphorous, manganese, sulphur and silicon present in the steel.

PART 3 EXECUTION

3.1 FABRICATION AND PLACEMENT

Reinforcement steel and accessories shall be fabricated and placed as specified and shown on approved shop drawings. Fabrication and placement details of steel and accessories not specified or shown shall be in accordance with ACI 315 and ACI 318/318R or as directed. Steel shall be fabricated to shapes and dimensions shown, placed where indicated within specified tolerances and adequately supported during concrete placement. At the time of concrete placement all steel shall be free from loose, flaky rust, scale (except tight mill scale), mud, oil, grease or any other coating that might reduce the bond with the concrete.

3.1.1 Hooks and Bends

Steel bars, except for zinc-coated or epoxy-coated, shall be mill or field-bent. Zinc-Coated and epoxy-coated bars shall be mill-bent prior to coating. All steel shall be bent cold unless authorized. No steel bars shall be bent after being partially embedded in concrete unless indicated or authorized.

3.1.2 Welding

Welding of steel bars will be permitted only where indicated or authorized. Welding shall be performed in accordance with AWS D1.4 except where otherwise specified or indicated.

3.1.3 Placing Tolerances

3.1.3.1 Spacing

The spacing between adjacent bars and the distance between layers of bars may not vary from the indicated position by more than one bar diameter nor more than 1 inch.

3.1.3.2 Concrete Cover

The minimum concrete cover of main reinforcement steel bars shall be as shown. The allowable variation for minimum cover shall be as follows:

MINIMUM COVER	VARIATION
6 inch	plus 1/2 inch
4 inch	plus 3/8 inch
3 inch	plus 3/8 inch

3.1.4 Splicing

Splices in steel bars shall be made only as required. Bars may be spliced at alternate or additional locations at no additional cost to the Government subject to approval.

3.1.4.1 Lap Splices

Lap splices shall be used only for bars smaller than size 14 and welded wire fabric. Lapped bars may be placed in contact and securely tied or spaced transversely apart to permit the embedment of the entire surface of each bar in concrete. Lapped bars shall not be spaced farther apart than 1/5 the required length of lap or 6 inches.

3.1.4.2 Butt-Splices

Butt-splices shall not be used

-- End of Section --

SECTION 03307

CONCRETE FOR MINOR STRUCTURES

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

ACI INTERNATIONAL (ACI)

ACI 308	(1992) Standard Practice for Curing Concrete
ACI 318/318R	(1999) Building Code Requirements for Reinforced Concrete and Commentary
ACI 347R	(1994) Guide to Formwork for Concrete

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 31	(1991) Making and Curing Concrete Test Specimens in the Field
ASTM C 33	(1993) Concrete Aggregate
ASTM C 39	(1993) Compressive Strength of Cylindrical Concrete Specimens
ASTM C 94	(1994) Ready-Mixed Concrete
ASTM C 143	(1990a) Slump of Hydraulic Cement Concrete
ASTM C 150	(1995) Portland Cement
ASTM C 171	(1992) Sheet Materials for Curing Concrete
ASTM C 172	(1990) Sampling Freshly Mixed Concrete
ASTM C 231	(1991b) Air Content of Freshly Mixed Concrete by the Pressure Method
ASTM C 260	(1994) Air-Entraining Admixtures for Concrete
ASTM C 309	(1994) Liquid Membrane-Forming Compounds for Curing Concrete
ASTM C 494	(1992) Chemical Admixtures for Concrete
ASTM C 618	(1994a) Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Portland Cement Concrete

ASTM D 75	(1987; R 1992) Sampling Aggregates

CORPS OF ENGINEERS (COE)

COE CRD-C 400	(1963) Requirements for Water for Use in Mixing or Curing Concrete

NATIONAL READY-MIXED CONCRETE ASSOCIATION (NRMCA)

NRMCA TMMB-01	Truck Mixer Agitator and Front Discharge Concrete Carrier Standards of the Truck Mixer Manufacturers Bureau
NRMCA QC 3	Quality Control Manual: Section 3, Plant Certifications Checklist: Certification of Ready Mixed Concrete Production Facilities

COMMONWEALTH OF PENNSYLVANIA, DEPARTMENT OF TRANSPORTATION SPECIFICATIONS

Publication 408	(2000-3)

1.2 DESIGN AND PERFORMANCE REQUIREMENTS

The Government will maintain the option to sample and test aggregates and concrete to determine compliance with the specifications. The Contractor shall provide facilities and labor as may be necessary to assist the Government in procurement of representative test samples. Samples of aggregates will be obtained at the point of batching in accordance with ASTM D 75. Concrete and grout will be sampled in accordance with ASTM C 172. Slump and air content will be determined in accordance with ASTM C 143 and ASTM C 231, respectively, when cylinders are molded. Concrete and grout compression test specimens will be made, cured, and transported in accordance with ASTM C 31. Concrete and grout compression test specimens will be tested in accordance with ASTM C 39. Samples for concrete strength tests will be taken for every 50 cubic yards or fraction thereof of concrete produced . A minimum of three specimens will be made from each sample; two will be tested at 28 days (90 days if pozzolan is used) for acceptance, and one will be tested at 7 days for information. Samples for grout strength tests will be taken at no less than three (3) test cylinders /cubes per pipe section grouted.

1.2.1 Strength

Acceptance test results will be the average strengths of two specimens tested at 28 days (90 days if pozzolan is used). The strength of the concrete will be considered satisfactory so long as the average of three consecutive acceptance test results equal or exceed the specified compressive strength, f'c, and no individual acceptance test result falls below f'c by more than 500 psi. The strength of the grout will be considered satisfactory so long as the average of three consecutive acceptance test results equal or exceed the specified compressive strength, f'c, and no individual acceptance test result falls below f'c by more than 250 psi.

1.2.2 Construction Tolerances

A Class "C" finish shall apply to all surfaces except those specified to receive a Class "A" finish shall apply to all surfaces exposed to view. A Class "C" finish shall apply to all surfaces which will be permanently concealed after construction. The surface requirements for the classes of finish required shall be as specified in ACI 347R.

1.2.3 Concrete Mixture Proportions

Concrete mixture proportions shall be the responsibility of the Contractor. Mixture proportions shall include the dry weights of cementitious materials ; the nominal maximum size of the coarse aggregate; the specific gravities, absorptions, and saturated surface-dry weights of fine and coarse aggregates; the quantities, types, and names of admixtures; and quantity of water per cubic yard of concrete. All materials included in the mixture proportions shall be of the same type and from the same source as will be used on the project. Specified compressive strength f'c shall be 4,000 psi at 28 days . The maximum nominal size coarse aggregate shall be 1 inch, in accordance with ACI 318/318R. The air content shall be between 4.5 and 7.5 percent. The slump shall be between 2 and 5 inches. The maximum water cement ratio shall be 0.50.

1.2.4 Grout Mixture Proportions

Grout mixture proportions shall be the responsibility of the Contractor. Mixture proportions shall include the dry weights of cementitious materials; the nominal maximum size of the coarse aggregate; the specific gravities, absorptions, and saturated surface-dry weights of fine and coarse aggregates; the quantities, types, and names of admixtures; and quantity of water per cubic yard of concrete. All materials included in the mixture proportions shall be of the same type and from the same source as will be used on the project. Specified compressive strength f'c shall be 2,000 psi at 28 days . The maximum nominal size coarse aggregate shall be 3/4 inch, in accordance with ACI 318/318R. The air content shall be between 4.5 and 7.5 percent. The slump shall be between 2 and 5 inches. The maximum water cement ratio shall be 0.55.

1.3 SUBMITTALS

Government approval is required for all submittals with a "G" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Grouting Plan; G|ED.

The Contractor shall submit his grouting plan at least 30 days prior to commencement of grouting.

SD-03 Product Data

Air-Entraining Admixture. Accelerating Admixture. Water-Reducing or Retarding Admixture. Curing Materials.

Manufacturer's literature is available from suppliers which demonstrates

compliance with applicable specifications for the above materials.

Batching and Mixing Equipment.

Batching and mixing equipment will be accepted on the basis of manufacturer's data which demonstrates compliance with the applicable specifications.

Conveying and Placing Concrete.

The methods and equipment for transporting, handling, depositing, and consolidating the concrete shall be submitted prior to the first concrete placement.

SD-06 Test Reports

Aggregates.

Aggregates will be accepted on the basis of certificates of compliance and test reports that show the materials meets the quality and grading requirements of the specifications under which it is furnished.

Concrete Mixture Proportions; G|ED.

Thirty days prior to placement of concrete, the contractor shall submit the mixture proportions that will produce concrete of the quality required. Applicable test reports shall be submitted to verify that the concrete mixture proportions selected will produce concrete of the quality specified.

Grout Mixture Proportions; G|ED.

Thirty days prior to placement of grout, the contractor shall submit the mixture proportions that will produce grout of the quality required. Applicable test reports shall be submitted to verify that the grout mixture proportions selected will produce grout of the quality specified.

SD-07 Certificates

Cementitious Materials.

Certificates of compliance attesting that the concrete materials meet the requirements of the specifications shall be submitted in accordance with the Special Clause "CERTIFICATES OF COMPLIANCE". Cementitious material will be accepted on the basis of a manufacturer's certificate of compliance, accompanied by mill test reports that the materials meet the requirements of the specification under which it is furnished.

Aggregates.

Aggregates will be accepted on the basis of certificates of compliance and tests reports that show the materials meet the quality and grading requirements of the specifications under which it is furnished.

PART 2 PRODUCTS

2.1 MATERIALS

2.1.1 Cementitious Materials

Cementitious materials shall conform to the appropriate specifications listed:

2.1.1.1 Portland Cement

ASTM C 150, Type I low alkalai, II low alkalai, III low alkali , except that the tricalcium aluminate of the Type III cement shall be limited to 5 percent. (In lieu of the low alkalai cement, a mix design utilizing flyash and regular Type II cement is acceptable as long as it can be demonstrated in the Mortar Bar Test (ASTM C 441) that the expansion at 14 days of the cement/flyash mix is less than or equal to the expansion of the low alkalai cement mix.)

2.1.1.2 Pozzolan

Pozzolan shall conform to ASTM C 618, Class C or F, including requirements of Tables 1A and 2A.

2.1.2 Aggregates

Aggregates shall meet the quality and grading requirements of ASTM C 33 Class Designations 5S or better.

2.1.3 Admixtures

Admixtures to be used, when required or approved, shall comply with the appropriate specification listed. Chemical admixtures that have been in storage at the project site for longer than 6 months or that have been subjected to freezing shall be retested at the expense of the contractor at the request of the Contracting Officer and shall be rejected if test results are not satisfactory.

2.1.3.1 Air-Entraining Admixture

Air-entraining admixture shall meet the requirements of ASTM C 260.

2.1.3.2 Accelerating Admixture

Calcium chloride shall not be used. Accelerators shall meet the requirements of ASTM C 494, Type C or E.

2.1.3.3 Water-Reducing or Retarding Admixture

Water-reducing or retarding admixture shall meet the requirements of ASTM C 494, Type A, B, or D.

2.1.4 Water

Water for mixing and curing shall be fresh, clean, potable, and free from injurious amounts of oil, acid, salt, or alkali, except that unpotable water may be used if it meets the requirements of COE CRD-C 400.

2.1.5 Curing Materials

Curing materials shall conform to the following requirements.

2.1.5.1 Impervious Sheet Materials

Impervious sheet materials, ASTM C 171, type optional, except polyethylene

film, if used, shall be white opaque.

2.1.5.2 Membrane-Forming Curing Compound

ASTM C 309, Type 1-D or 2.

PART 3 EXECUTION

3.1 PREPARATION

3.1.1 General

Construction joints shall be prepared to expose coarse aggregate, and the surface shall be clean, damp, and free of laitance. Ramps and walkways, as necessary, shall be constructed to allow safe and expeditious access for concrete and workmen. Snow, ice, standing or flowing water, loose particles, debris, and foreign matter shall have been removed. Earth foundations shall be satisfactorily compacted. Spare vibrators shall be available. The entire preparation shall be accepted by the Government prior to placing.

3.1.2 Embedded Items

Embedded items shall be of the size and type indicated or as needed for the application.

3.1.3 Production of Concrete

3.1.3.1 Ready-Mixed Concrete

Concrete shall be furnished from a ready-mixed concrete plant. Ready-mixed concrete shall be batched, mixed, and transported in accordance with ASTM C 94, except as otherwise specified. Truck mixers, agitators, and nonagitating transporting units shall comply with NRMCA TMMB-01 or shall comply with PENDOT Publication 408 requirements if approved by the Contracting Officer. Ready-mix plant equipment and facilities shall be certified in accordance with NRMCA QC 3 or shall be PENDOT certified. Approved batch tickets shall be furnished for each load of ready-mixed concrete.

3.2 CONVEYING AND PLACING CONCRETE

Conveying and placing concrete shall conform to the following requirements.

3.2.1 General

Concrete placement shall not be permitted when weather conditions prevent proper placement and consolidation without approval. The concrete shall be delivered to the site of the work and discharge shall be completed within 1-1/2 hours or 45 minutes when the placing temperature is 85 degrees F or greater unless a retarding admixture is used. Concrete shall be conveyed from the mixer to the forms as rapidly as practicable by methods which prevent segregation or loss of ingredients. Concrete shall be in place and consolidated within 15 minutes after discharge from the mixer. Concrete shall be deposited as close as possible to its final position in the forms and be so regulated that it may be effectively consolidated in horizontal layers 18 inches or less in thickness with a minimum of lateral movement. The placement shall be carried on at such a rate that the formation of cold joints will be prevented.

3.2.2 Consolidation

Each layer of concrete shall be consolidated by internal vibrating equipment. Internal vibration shall be systematically accomplished by inserting the vibrator through the fresh concrete in the layer below at a uniform spacing over the entire area of placement. The distance between insertions shall be approximately 1.5 times the radius of action of the vibrator and overlay the adjacent, just-vibrated area by a few inches. The vibrator shall penetrate rapidly to the bottom of the layer and at least 6 inches into the layer below, if such a layer exists. It shall be held stationary until the concrete is consolidated and then withdrawn slowly at the rate of about 3 inches per second.

3.2.3 Cold-Weather Requirements

No concrete placement shall be made when the ambient temperature is below 35 degrees F or if the ambient temperature is below 40 degrees F and falling. Suitable covering and other means as approved shall be provided for maintaining the concrete at a temperature of at least 50 degrees F for not less than 72 hours after placing and at a temperature above freezing for the remainder of the curing period. Salt, chemicals, or other foreign materials shall not be mixed with the concrete to prevent freezing. Any concrete damaged by freezing shall be removed and replaced at the expense of the contractor.

3.2.4 Hot-Weather Requirements

When the rate of evaporation of surface moisture, as determined by use of Figure 1 of ACI 308, is expected to exceed 0.2 pound per square foot per hour, provisions for windbreaks, shading, fog spraying, or covering with a light-colored material shall be made in advance of placement, and such protective measures shall be taken as quickly as finishing operations will allow.

3.3 FINISHING

3.3.1 General

No finishing or repair will be done when either the concrete or the ambient temperature is below 50 degrees F.

3.3.2 Finishing Formed Surfaces

All fins and loose materials shall be removed, and surface defects including tie holes shall be filled. All honeycomb areas and other defects shall be repaired. All unsound concrete shall be removed from areas to be repaired. Surface defects greater than 1/2 inch in diameter and holes left by removal of tie rods in all surfaces not to receive additional concrete shall be reamed or chipped and filled with dry-pack mortar. The prepared area shall be brush-coated with an approved epoxy resin or latex bonding compound or with a neat cement grout after dampening and filled with mortar or concrete. The cement used in mortar or concrete for repairs to all surfaces permanently exposed to view shall be a blend of portland cement and white cement so that the final color when cured will be the same as adjacent concrete.

3.3.3 Finishing Unformed Surfaces

All unformed surfaces that are not to be covered by additional concrete or backfill shall be float finished to elevations shown, unless otherwise specified. Surfaces to receive additional concrete or backfill shall be brought to the elevations shown and left as a true and regular surface. Exterior surfaces shall be sloped for drainage unless otherwise shown. Joints shall be carefully made with a jointing tool. Unformed surfaces shall be finished to a tolerance of 3/8 inch for a float finish [and 5/16 inch for a trowel finish] as determined by a 10 foot straightedge placed on surfaces shown on the plans to be level or having a constant slope. Finishing shall not be performed while there is excess moisture or bleeding water on the surface. No water or cement shall be added to the surface during finishing.

3.3.3.1 Float Finish

Surfaces to be float finished shall be screeded and darbied or bullfloated to eliminate the ridges and to fill in the voids left by the screed. In addition, the darby or bullfloat shall fill all surface voids and only slightly embed the coarse aggregate below the surface of the fresh concrete. When the water sheen disappears and the concrete will support a person's weight without deep imprint, floating should be completed. Floating should embed large aggregates just beneath the surface, remove slight imperfections, humps, and voids to produce a plane surface, compact the concrete, and consolidate mortar at the surface.

3.3.3.2 Trowel Finish

A trowel finish shall be applied to all unformed surfaces. Trowelling shall be done immediately following floating to provide a smooth, even, dense finish free from blemishes including trowel marks. Finished surfaces shall be protected from damage during the construction period.

3.4 CURING AND PROTECTION

Beginning immediately after placement and continuing for at least 7 days, except for concrete made with Type III cement, at least 3 days, all concrete shall be cured and protected from premature drying, extremes in temperature, rapid temperature change, freezing, mechanical damage, and exposure to rain or flowing water. All materials and equipment needed for adequate curing and protection shall be available and at the site of the placement prior to the start of concrete placement. Preservation of moisture for concrete surfaces not in contact with forms shall be accomplished by one of the following methods:

a. Continuous sprinkling or ponding.

b. Application of absorptive mats or fabrics kept continuously wet.

c. Application of sand kept continuously wet.

d. Application of impervious sheet material conforming to ASTM C 171.

e. Application of membrane-forming curing compound conforming to ASTM C 309, Type 1-D, on surfaces permanently exposed to view and Type 2 on other surfaces shall be accomplished in accordance with manufacturer's instructions.

The preservation of moisture for concrete surfaces placed against wooden forms shall be accomplished by keeping the forms continuously wet for 7

days , except for concrete made with Type III cement, 3 days. If forms are removed prior to end of the required curing period, other curing methods shall be used for the balance of the curing period. During the period of protection removal, the temperature of the air in contact with the concrete shall not be allowed to drop more than 25 degrees F within a 24 hour period.

3.5 TESTS AND INSPECTIONS

3.5.1 General

The individuals who sample and test concrete and grout as required in this specification shall have demonstrated a knowledge and ability to perform the necessary test procedures equivalent to the ACI minimum guidelines for certification of Concrete Field Testing Technicians, Grade I.

3.5.2 Inspection Details and Frequency of Testing

3.5.2.1 Preparations for Placing

Foundation or construction joints, forms, and embedded items shall be inspected in sufficient time prior to each concrete placement by the Contractor to certify that it is ready to receive concrete.

3.5.2.2 Air Content

Air content shall be checked for each truckload of concrete or grout delivered to the site. Samples shall be obtained in accordance with ASTM C 172 and tested in accordance with ASTM C 231.

3.5.2.3 Slump

Slump shall be checked for each truckload of concrete or grout delivered to the site. Samples shall be obtained in accordance with ASTM C 172 and tested in accordance with ASTM C 143.

3.5.2.4 Consolidation and Protection

The Contractor shall ensure that the concrete is properly consolidated, finished, protected, and cured.

3.5.3 Action Required

3.5.3.1 Placing

The placing foreman shall not permit placing to begin until he has verified that an adequate number of acceptable vibrators, which are in working order and have competent operators, are available. Placing shall not be continued if any pile is inadequately consolidated.

3.5.3.2 Air Content

Whenever a test result is outside the specification limits, the concrete or grout shall not be delivered to the forms and an adjustment shall be made to the dosage of the air-entrainment admixture.

3.5.3.3 Slump

Whenever a test result is outside the specification limits, the concrete or grout shall not be delivered to the forms and an adjustment should be made

in the batch weights of water and fine aggregate. The adjustments are to be made so that the water-cement ratio does not exceed that specified in the submitted concrete mixture proportion.

3.5.4 Reports

The results of all tests and inspections conducted at the project site shall be reported informally at the end of each shift and in writing weekly and shall be delivered within 3 days after the end of each weekly reporting period. See Section 01451 CONTRACTOR QUALITY CONTROL.

3.6 GROUTING PROCEDURES FOR CONCRETE PIPE LINER

This work shall consist of cleaning the pipes to be lined and grout-filling the annular space, in accordance with the drawings and requirements of these specifications, and to the satisfaction of the Contracting Officer. In general, the work consists of completely grouting the annular space between the new concrete pipe liner and the existing culvert pipe.

3.6.1 Cleaning and Inspection of Existing Pipes

The pipes to be lined shall be prepared by thoroughly cleaning the interior of the pipe to remove all sediment, loose material, and water, and shall be inspected for readiness for lining and grouting. The pipes can be cleaned manually using high pressure hose or other approved methods. The Contracting Officer shall have the final decision as to whether the pipe may be entered for cleaning and inspection. All entrances into piping shall be in accordance to confined space requirements of these specifications and all applicable codes and regulations. Inspection for readiness for lining and grouting may be accomplished by manual entry in the presence of the Contracting Officer

3.6.2 Preparation for Grouting

Grouting Plan: Prior to grouting, the Contractor shall submit to the Contracting Officer for approval, a plan for lining, bracing, bulkheading, grouting, and measurment of grout and pipe volume. The Contractor shall include in his plan sufficient bracing of the pipe during grouting to hold the invert elevations shown in the Contract Drawings. The Contractor shall calculate the volume of the annular space to be grouted. The Contractor shall include in his plan the method of inspection to assure the complete filling of the annular space.

3.6.3 Grouting Requirements

Grout shall be placed in a continuous manner. The Contractor's placement method shall prevent floating or shifting of the concrete pipe liner and shall prevent segregation or voids from occurring in the grout mix. All pipes shall be filled to a volume of no less than 95% of the full volume to be grouted. There shall be no continuous void extending from one end to the other end (such as along the top).

3.6.4 Volume Verification

The Contractor will report the quantity of the mix actually used in the grouting and compare against the calculated volume to be grouted. If the volume used is less than 95% of the calculated volume to be grouted, the Contractor will be required to drill and insert additional grout tubes into

the pipe and grout the remaining voids.

-- End of Section --

SECTION 09965A

PAINTING: HYDRAULIC STRUCTURES

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI Z87.1	(1989; R 1998) Occupational and Educational Eye and Face Protection
ANSI Z358.1	(1998) Emergency Eyewash and Shower Equipment

ASTM INTERNATIONAL (ASTM)

ASTM D 12	(1988; R 1998) Raw Tung Oil
ASTM D 153	(1984; R 1996el) Specific Gravity of Pigments
ASTM D 281	(1995; R 2002) Oil Absorption of Pigments by Spatula Rub-Out
ASTM D 520	(2000) Zinc Dust Pigment
ASTM D 561	(1982; R 1996e1) Carbon Black Pigment for Paint
ASTM D 740	(1994; R 2001) Methyl Ethyl Ketone
ASTM D 841	(2002) Nitration Grade Toluene
ASTM D 962	(1981; R 1999) Aluminum Powder and Paste Pigments for Paints
ASTM D 1045	(1995; R 2001) Sampling and Testing Plasticizers Used in Plastics
ASTM D 1152	(1997; R 2001) Methanol (Methyl Alcohol)
ASTM D 1153	(1994; R 2001) Methyl Isobutyl Ketone
ASTM D 1186	(2001) Nondestructive Measurement of Dry Film Thickness of Nonmagnetic Coatings Applied to a Ferrous Base
ASTM D 1200	(1994; R 1999) Viscosity by Ford Viscosity Cup

ASTM D 1210	(1996) Fineness of Dispersion of Pigment-Vehicle Systems by Hegman-Type Gage
ASTM D 1308	(1987; R 1998) Effect of Household Chemicals on Clear and Pigmented Organic Finishes
ASTM D 1475	(1998) Density of Paint, Liquid Coatings, Inks, and Related Products
ASTM D 1640	(1995; R 1999) Drying, Curing, or Film Formation of Organic Coatings at Room Temperature
ASTM D 2369	(2001e1) Volatile Content of Coatings
ASTM D 2917	(1991; R 1998) Methyl Isoamyl Ketone
ASTM D 3721	(1983; R 1999) Synthetic Red Iron Oxide Pigment
ASTM D 4206	(1996; R 2001) Sustained Burning of Liquid Mixtures Using the Small Scale Open-Cup Apparatus
ASTM D 4417	(1993; R 1999) Field Measurement of Surface Profile of Blast Cleaned Steel
ASTM E 1347	(1997) Color and Color Difference Measurement by Tristimulus (Filter) Colorimetry

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

29 CFR 1910	Occupational Safety and Health Standards
29 CFR 1910.20	Access to Employee Exposure and Medical Records
29 CFR 1910.94	Ventilation
29 CFR 1910.134	Respiratory Protection
29 CFR 1910.146	Permit-required Confined Spaces
29 CFR 1910, Subpart I	Personal Protective Equipment
29 CFR 1926	Safety and Health Regulations for Construction
29 CFR 1926.62	Lead
40 CFR 50.12	National Primary and Secondary Ambient Air Quality Standards for Lead
40 CFR 50, App B	Reference Method for the Determination of Suspended Particulate Matter in the Atmosphere (High Volume Method)

40 CFR 58, App E	Probe and Monitoring Path Siting Criteria for Ambient Air Quality Monitoring
40 CFR 60, App A, Mtd 22	Visual Determination of Fugitive Emissions from Material Sources and Smoke Emissions from Flares
40 CFR 117	Determination of Reportable Quantities for Hazardous Substances
40 CFR 122	EPA Administered Permit Programs: The National Pollutant Discharge Elimination System
40 CFR 261	Identification and Listing of Hazardous Waste
40 CFR 261, App III	Chemical Analysis Test Methods
40 CFR 261, App II, Mtd 1311	Toxicity Characteristic Leaching Procedure (TCLP)
40 CFR 262	Standards Applicable to Generators of Hazardous Waste
40 CFR 262.22	Number of Copies
40 CFR 263	Standards Applicable to Transporters of Hazardous Waste
40 CFR 302	Designation, Reportable Quantities, and Notification
40 CFR 355	Emergency Planning and Notification
49 CFR 171, Subchapter C	Hazardous Materials Regulations

U.S. GENERAL SERVICES ADMINISTRATION (GSA)

FED-STD-595	(Rev B) Colors, Volume 1

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1	(1996) U.S. Army Corps of Engineers Safety and Health Requirements Manual

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70	(2002) National Electrical Code

NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH (NIOSH)

NIOSH 98-119	(1998, 4th Ed) Supplement 2 to NIOSH Manual of Analytical Methods

THE SOCIETY FOR PROTECTIVE COATINGS (SSPC)

SSPC Guide 6	(1995) Guide for Containing Debris

	Generated During Paint Removal Operations
SSPC QP 1	(1998; R 2000) Standard Procedure for Evaluating Painting Contractors (Field Application to Complex Industrial Structures)
SSPC QP 2	(2000) Standard Procedure for the Qualifications of Painting Contractors (Field Removal of Hazardous Coatings from Complex Structures)
SSPC Paint 25	(1997; R 2000) Zinc Oxide, Alkyd, Linseed Oil Primer for Use Over Hand Cleaned Steel, Type I and Type II
SSPC Paint 25 BCS	(2000) Zinc Oxide, Alkyd, Linseed Oil Primer for Use Over Blast Cleaned Steel Type I and Tyoe II
SSPC SP 1	(1982; R 2000) Solvent Cleaning
SSPC SP 3	(1982; R 2000) Power Tool Cleaning
SSPC SP 5	(2000) White Metal Blast Cleaning
SSPC SP 7	(2000) Brush-Off Blast Cleaning

1.2 LUMP SUM PRICE

1.2.1 Painting: Hydraulic Structures

1.2.1.1 Payment

Payment will be made for costs associated with "Painting: Hydraulic Structures", which includes full compensation for furnishing all materials, equipment, and labor required to paint the hydraulic structures in accordance with this section.

1.2.1.2 Unit of Measure

Unit of measure: lump sum.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-03 Product Data

Safety and Health Provisions; G, AR

The Contractor shall submit an Accident Prevention Plan in accordance with the requirements of Section 01 of EM 385-1-1. The plan shall include, but is not limited to, each of the topic areas listed in Appendix A therein and the requirements of paragraph SAFETY AND HEALTH PROVISIONS; each topic shall be developed in a

concise manner to include management and operational aspects.

Confined Spaces; G, AR

The Contractor shall submit detailed written standard operating procedures for confined spaces in accordance with 29 CFR 1910.146 and EM 385-1-1, Section 6I, and as further described in this paragraph.

a. The procedures shall include certificates of calibration for all testing and monitoring equipment. The certificates of calibration shall include: type of equipment, model number, date of calibration, firm conducting calibration, and signature of individual certifying calibration.

b. The procedures shall include methods of inspection of personal protective equipment prior to use.

c. The procedures shall include work practices and other engineering controls designed to reduce airborne hazardous chemical exposures to a minimum.

d. The procedures shall include specification of the design and installation of ventilation systems which shall provide adequate oxygen content and provide for the dilution of paint solvent vapor, lead, and other toxic particulates within the confined space. In addition, the contractor shall include plans to evaluate the adequacy of air flow patterns.

Respirators; G, AR

The Contractor shall submit a comprehensive written respiratory protection program in accordance with 29 CFR 1910.134, 29 CFR 1926.62, and Section 05.E of EM 385-1-1.

Certified Laboratory; G, AR

The contractor shall submit an Airborne Sampling Plan detailing the NIOSH 98-119, Factory Mutual, or Underwriters Laboratories approved equipment, equipment calibration procedures, sampling methods, sampling to be performed, and analytical procedures to be used based on the type of work to be performed and anticipated toxic contaminants to be generated. The contractor shall include the name of the accredited laboratory, listed by the American Industrial Hygiene Association (AIHA), to be used to conduct the analysis of any collected air samples.

Ventilation; G, AR

The contractor shall submit a plan to provide ventilation assessment as required by paragraph PAINT APPLICATION, subparagraph VENTILATION.

Medical Status; G, AR

The Contractor shall submit a Medical Surveillance Plan as required in paragraph MEDICAL STATUS and provide a statement from the examining physician indicating the name of each employee evaluated and any limitations which will preclude the employee

from performing the work required. The statement shall include the date of the medical evaluation, the physician's name, signature, and telephone number.

Lead-Based Paint Removal; G, AR

The Contractor shall submit a Worker Protection Plan in accordance with the requirements of 29 CFR 1926.62. The plan shall address all necessary aspects of worker protection and shall include activities emitting lead, means to achieve compliance, alternative technologies considered, air monitoring program, implementation schedule, work practice program, administrative controls, multicontractor site arrangements, and jobsite inspections.

Environmental Protection; G, AR

The Contractor shall submit an Environmental Compliance Plan. The plan shall incorporate the submittals for Water Quality Plan, Soil Quality Plan, Ambient Air Monitoring Plan, and Visible Emissions Monitoring Plan. The submitted plan shall also address all aspects of establishing and demarcating regulated areas, ventilation/containment system performance verification, and reporting of accidental releases.

Waste Classification, Handling, and Disposal; G, AR

The contractor shall submit a Waste Classification, Handling, and Disposal Plan in accordance with the requirements of 40 CFR 261 and 40 CFR 262 and paragraph Waste Classification, Handling, and Disposal.

Containment; G, AR

The Contractor shall submit a plan for containing debris generated during paint removal operations in accordance with the requirements of paragraph Containment. The plan shall include drawings, load-bearing capacity calculations, and wind load calculations. When the design is such that the spent abrasive is allowed to accumulate in quantities greater than 1,000 pounds, and/or impart a significant wind load on the structure, the contractor shall have the drawings approved by a registered structural engineer. The drawings and calculations shall be stamped with the engineer's seal. The contractor shall also identify the type and placement of water booms, methods for anchoring the booms, and the procedures for removing debris.

Visible Emissions Monitoring; G, AR

The Contractor shall submit a Visible Emissions Monitoring Plan in accordance with the paragraph Visible Emissions Monitoring. The plan shall include the provisions for halting work and correcting the containment in the event unacceptable emissions are observed. General statements shall not be used; specific methods, procedures, and details are required.

PM-10 Monitoring; G, AR

The Contractor shall submit a plan for monitoring emissions of

Total Suspended Particulates (TSP). The plan shall comply with the requirements of EPA regulation 40 CFR 50.12 and paragraph TSP Monitoring. The plan shall also include provisions for halting work and correcting the containment in the event unacceptable emissions occur.

Water Quality; G, AR

For all job sites where lead-containing or other hazardous paint will be removed, the Contractor shall submit a Water Quality Plan. The plan shall include provisions for halting work if spills or emissions are observed entering into bodies of water or found in areas where storm water runoff could carry the debris into bodies of water or storm sewers. The plan shall also address cleanup and reporting procedures.

Soil Quality; G, AR

For all job sites where lead-containing or other hazardous paint will be removed, the Contractor shall submit a Soil Quality Plan. The plan shall include provisions for halting the work should soil contamination occur, correcting the deficiencies responsible for the contamination, and provide procedures for removing and replacing contaminated soil.

SD-04 Samples

Special Paint Formulas; G, AR
Paint Formulations; G, AR

The Contractor shall submit samples of all special paint formula, Military, Master Painter Institute, Commercial Item Description, and SSPC paints. For products that are specified to be applied in accordance with the manufacturer's recommendations the Contractor shall also submit the paint producers product data sheet or other written instructions for those products.

Solvent and Thinners; G, AR

Samples shall be submitted of the thinners which are those solvents used to reduce the viscosity of the paint.

SD-06 Test Reports

TSP Monitoring; G, AR

The Contractor shall submit reports of the TSP monitoring tests as described in paragraph TSP Monitoring.

Certified Laboratory; G, AR

The Contractor shall submit reports of airborne sampling tests.

Soil Quality; G, AR

The Contractor shall submit the results of the prework and post work soil quality tests in accordance with the requirements of paragraph Soil Quality.

Inspection; G, AR

The Contractor shall submit records of inspections and operations performed in accordance with paragraph INSPECTION. Submittals shall be made on a daily basis.

SD-07 Certificates

Qualifications; G, AR

The Contractor shall submit certification pursuant to paragraph QUALIFICATIONS for all job sites. Submittal of the qualifications and experience of any additional qualified and competent persons employed to provide on-site environmental, safety, and health shall also be provided. Acceptance of this submission must be obtained prior to the submission of other required environmental, safety, and health submittal items.

Qualified Painting Contractor; G, AR

The Contractor shall submit a copy of their current SSPC QP 1 certification.

Qualified Hazardous Paint Removal Contractor; G, AR

The Contractor shall submit a copy of their current SSPC QP 2 certification.

Coating Thickness Gage Qualification; G, AR

Documentation of manufacturer's certification shall be submitted for all coating thickness gages.

1.4 QUALIFICATIONS

Qualifications and experience shall comply with the following.

1.4.1 Certified Professional

The Contractor shall utilize a qualified and competent person as defined in Section 01 of EM 385-1-1 to develop the required safety and health submittal and to provide on-site safety and health services during the contract period. The person shall be a Certified Industrial Hygienist (CIH), an Industrial Hygienist (IH), or a Certified Safety Professional (CSP) with a minimum of 3 years of demonstrated experience in similar related work. The Contractor shall certify that the Certified Industrial Hygienist (CIH) holds current and valid certification from the American Board of Industrial Hygiene (ABIH), that the IH is considered board eligible by written confirmation from the ABIH, or that the CSP holds current and valid certification from the American Board of Certified Safety Professionals. The CIH, IH, or CSP may utilize other qualified and competent persons, as defined in EM 385-1-1, to conduct on-site safety and health activities as long as these persons have a minimum of 2 years of demonstrated experience in similar related work and are under the direct supervision of the CIH, IH, or CSP. For lead containing jobsites, the competent and qualified person shall have successfully completed an EPA or state accredited lead-based paint abatement Supervisor course specific to the work to be performed and shall possess current and valid state and/or local government certification, as required.

1.4.2 Certified Laboratory

The Contractor shall provide documentation which includes the name, address, and telephone number of the laboratories to be providing services. In addition, the documentation shall indicate that each laboratory is an EPA National Lead Laboratory Accreditation Program (NLLAP) accredited laboratory and that each is rated proficient in the NIOSH/EPA Environmental Lead Proficiency Analytical Testing Program (ELPAT)and will document the date of current accreditation. Certification shall include accreditation for heavy metal analysis, list of experience relevant to analysis of lead in air, and a Quality Assurance and Quality Control Program.

1.4.3 Qualified Painting Contractor

The Contractor shall be a certified SSPC-QP 1 Painting Contractor.

1.4.4 Qualified Hazardous Paint Removal Contractor

The Contractor shall be a certified SSPC-QP 2 Painting Contractor.

1.4.5 Qualified Paint Applicator

Documentation of certification shall be submitted for all paint applicators. Prior to the initiation of any work all paint applicators shall be tested and certified as meeting the requirements of the qualified paint applicator. Certification shall be administered by the government approved independent third party Test Agency. Applicators failing the certification test shall not be permitted to apply any paint on the project.

1.4.5.1 Test Plate

The test plate shall consist of a 6 feet by 6 feet steel plate with a 3/8 inch minimum thickness. The test plate shall have at least six bolts, three with bolt heads exposed and three with threads exposed, a 12-inch wide flange and a 6-inch diameter pipe each 18 inches long welded perpendicular to the test panel and a 6-inch deep T-beam with sealed ends welded horizontal across the test panel one foot up from the bottom all within the area to be painted on one side. Bolts shall be 1 inch minimum diameter.

1.4.5.2 Certification Test Procedure

Certification testing of paint applicators shall be conducted at the job site in coordination with the Contracting Officer. The Contractor shall supply the fabricated test plates to be used for the tests and shall provide crane service, rigging, and any other work necessary to provide accessibility for the certification testing and inspection. In preparation, the Contractor shall clean and prepare the test plates in accordance with the requirements of the contracted work. Abrasive blasting shall be performed with the blast media to be used in the contract. The paints to be applied shall be the Contractor supplied materials and shall be those previously tested and approved for use on the contract. Paints shall be applied as specified in the contract. The painter being tested shall mix and thin the paints to be used in the test and shall set up and adjust the application equipment for use. Each painter shall apply each of the types of paint comprising the specified system. The test plate shall be painted in a near vertical position.

1.4.5.3 Certification Criteria

The paint applicator shall be evaluated based on the conformance of the applied paint system to the requirements of the specifications. Deficiencies in the coatings, improper mixing or improper application methods are basis for failure. The Test Agency shall be the sole judge as to the acceptability of each paint applicators performance.

1.4.6 Coating Thickness Gage Qualification

Documentation of certification shall be submitted for all coating thickness gages. Magnetic flux thickness gages as described in ASTM D 1186 shall be used to make all coating thickness measurements on ferrous metal substrates. Gages shall have an accuracy of +/- 3 percent or better. Gages to be used on the job shall be certified by the manufacturer as meeting these requirements.

1.5 SAMPLING AND TESTING

The Contractor shall allow at least 30 days for sampling and testing. Sampling may be at the jobsite or source of supply. The Contractor shall notify the Contracting Officer when the paint and thinner are available for sampling. Sampling of each batch shall be witnessed by the Contracting Officer unless otherwise specified or directed. A 1-quart sample of paint and thinner shall be submitted for each batch proposed for use. The sample shall be labeled to indicate formula or specification number and nomenclature, batch number, batch quantity, color, date made, and applicable project contract number. Testing will be performed by the Government. Costs for retesting rejected material will be deducted from payments to the Contractor.

1.6 SAFETY AND HEALTH PROVISIONS

Work shall be performed in accordance with the requirements of 29 CFR 1910, 29 CFR 1926, EM 385-1-1, and other references as listed herein. Matters of interpretation of the standards shall be submitted to the Contracting Officer for resolution before starting work. Where the regulations conflict, the most stringent requirements shall apply. Paragraph SAFETY AND HEALTH PROVISIONS supplements the requirements of EM 385-1-1, paragraph (1). In any conflict between Section 01 of EM 385-1-1 and this paragraph, the provisions herein shall govern.

1.6.1 Abrasive Blasting

The Contractor shall comply with the requirements in Section 06.H of EM 385-1-1.

1.6.1.1 Hoses And Nozzles

In addition to the requirements in Section 20 of EM 385-1-1, hoses and hose connections of a type to prevent shock from static electricity shall be used. Hose lengths shall be joined together by approved couplings of a material and type designed to prevent erosion and weakening of the couplings. The couplings and nozzle attachments shall fit on the outside of the hose and shall be designed to prevent accidental disengagement.

1.6.1.2 Workers Other Than Blasters

Workers other than blasting operators working in close proximity to

abrasive blasting operations shall be protected by utilizing MSHA/NIOSH-approved half-face or full-face air purifying respirators equipped with high-efficiency particulate air (HEPA) filters, eye protection meeting or exceeding ANSI Z87.1 and hearing protectors (ear plugs and/or ear muffs) providing a noise reduction rating of at least 20 dBA or as needed to provide adequate protection.

1.6.2 Cleaning with Compressed Air

Cleaning with compressed air shall be in accordance with Section 20.B.5 of EM 385-1-1 and personnel shall be protected as specified in 29 CFR 1910.134.

1.6.3 Cleaning with Solvents

1.6.3.1 Ventilation

Ventilation shall be provided where required by 29 CFR 1910.146 or where the concentration of solvent vapors exceeds 10 percent of the Lower Explosive Limit (LEL). Ventilation shall be in accordance with 29 CFR 1910.94, paragraph (c)(5).

1.6.3.2 Personal Protective Equipment

Personal protective equipment shall be provided where required by 29 CFR 1910.146 and in accordance with 29 CFR 1910, Subpart I.

1.6.4 Mixing Epoxy and Polyurethane Resin Formulations

1.6.4.1 Exhaust Ventilation

Local exhaust ventilation shall be provided in the area where the curing agent and resin are mixed. This ventilation system shall be capable of providing at least 100 linear fpm of capture velocity measured at the point where the curing agent and resin contact during mixing.

1.6.4.2 Personal Protective Equipment

Exposure of skin and eyes to epoxy resin components shall be avoided by wearing appropriate chemically resistant gloves, apron, safety goggles, and face shields meeting or exceeding the requirements of ANSI Z87.1.

1.6.4.3 Medical Precautions

Individuals who have a history of sensitivity to epoxy or polyurethane resin systems shall be medically evaluated before any exposure can occur. Individuals who are medically evaluated as exhibiting a sensitivity to epoxy resins shall not conduct work tasks or otherwise be exposed to such chemicals. Individuals who develop a sensitivity shall be immediately removed from further exposure and medically evaluated.

1.6.4.4 Emergency Equipment

A combination unit, comprised of an eyewash and deluge shower, within close proximity to the epoxy or polyurethane resin mixing operation shall be provided in accordance with ANSI Z358.1, paragraph (9).

1.6.5 Paint Application

1.6.5.1 Ventilation

When using solvent-based paint in confined spaces, ventilation shall be provided to exchange air in the space at a minimum rate of 5,000 cubic feet per minute per spray gun in operation. It may be necessary to install both a mechanical supply and exhaust ventilation system to effect adequate air changes within the confined space. All air-moving devices shall be located and affixed to an opening of the confined space in a manner that assures that the airflow is not restricted or short circuited and is supplied in the proper direction. Means of egress shall not be blocked. Ventilation shall be continued after completion of painting and through the drying phase of the operation. If the ventilation system fails or the concentration of volatiles exceeds 10 percent of the LEL (except in the zone immediately adjacent to the spray nozzle), painting shall be stopped and spaces evacuated until such time that adequate ventilation is provided. An audible alarm that signals system failure shall be an integral part of the ventilation system. The effectiveness of the ventilation shall be checked by using ventilation smoke tubes and making frequent oxygen and combustible gas readings during painting operations. Exhaust ducts shall discharge clear of the working areas and away from possible sources of ignition.

1.6.5.2 Explosion Proof Equipment

Electrical wiring, lights, and other equipment located in the paint spraying area shall be of the explosion proof type designed for operation in Class I, Division 1, Group D, hazardous locations as required by the NFPA 70. Electrical wiring, motors, and other equipment, outside of but within 20 feet of any spraying area, shall not spark and shall conform to the provisions for Class I, Division 2, Group D, hazardous locations. Electric motors used to drive exhaust fans shall not be placed inside spraying areas or ducts. Fan blades and portable air ducts shall be constructed of nonferrous materials. Motors and associated control equipment shall be properly maintained and grounded. The metallic parts of air-moving devices, spray guns, connecting tubing, and duct work shall be electrically bonded and the bonded assembly shall be grounded.

1.6.5.3 Further Precautions

a. Workers shall wear nonsparking safety shoes.

b. Solvent drums taken into the spraying area shall be placed on nonferrous surfaces and shall be grounded. Metallic bonding shall be maintained between containers and drums when materials are being transferred.

c. Insulation on all power and lighting cables shall be inspected to ensure that the insulation is in excellent working condition and is free of all cracks and worn spots. Cables shall be further inspected to ensure that no connections are within 50 feet of the operation, that lines are not overloaded, and that they are suspended with sufficient slack to prevent undue stress or chafing.

1.6.5.4 Ignition Sources

Ignition sources, to include lighted cigarettes, cigars, pipes, matches, or cigarette lighters shall be prohibited in area of solvent cleaning, paint storage, paint mixing, or paint application.

1.6.6 Health Protection

1.6.6.1 Air Sampling

The Contractor shall perform air sampling and testing as needed to assure that workers are not exposed to contaminants above the permissible exposure limit. In addition, the Contractor shall provide the Contracting Officer with a copy of the test results from the laboratory within five working days of the sampling date and shall provide results from direct-reading instrumentation on the same day the samples are collected.

1.6.6.2 Respirators

During all spray painting operations, spray painters shall use approved SCBA or SAR (air line) respirators, unless valid air sampling has demonstrated contaminant levels to be consistently within concentrations that are compatible with air-purifying respirator Assigned Protection Factor (APF). Persons with facial hair that interferes with the sealing surface of the facepiece to faceseal or interferes with respirator valve function shall not be allowed to perform work requiring respiratory protection. Air-purifying chemical cartridge/canister half- or full-facepiece respirators that have a particulate prefilter and are suitable for the specific type(s) of gas/vapor and particulate contaminant(s) may be used for nonconfined space painting, mixing, and cleaning (using solvents). These respirators may be used provided the measured or anticipated concentration of the contaminant(s) in the breathing zone of the exposed worker does not exceed the APF for the respirator and the gas/vapor has good warning properties or the respirator assembly is equipped with a NIOSH-approved end of service life indicator for the gas(es)/vapor anticipated or encountered. Where paint contains toxic elements such as lead, cadmium, chromium, or other toxic particulates that may become airborne during painting in nonconfined spaces, air-purifying half- and full-facepiece respirators or powered air-purifying respirators equipped with appropriate gas vapor cartridges, in combination with a high-efficiency filter, or an appropriate canister incorporating a high-efficiency filter, shall be used.

1.6.6.3 Protective Clothing and Equipment

All workers shall wear safety shoes or boots, appropriate gloves to protect against the chemical to be encountered, and breathable, protective, full-body covering during spray-painting applications. Where necessary for emergencies, protective equipment such as life lines, body harnesses, or other means of personnel removal shall be used during confined-space work.

1.7 MEDICAL STATUS

Prior to the start of work and annually thereafter, all Contractor employees working with or around paint systems, thinners, blast media, those required to wear respiratory protective equipment, and those who will be exposed to high noise levels shall be medically evaluated for the particular type of exposure they may encounter. Medical records shall be maintained as required by 29 CFR 1910.20. The evaluation shall include:

a. Audiometric testing and evaluation of employees who will work in a noise environment with a time weighted average greater than or equal to 90 dBA.

b. Vision screening (employees who use full-facepiece respirators shall not wear contact lenses).

c. Medical evaluation shall include, but shall not be limited to, the following:

(1) Medical history including, but not limited to, alcohol use, with emphasis on liver, kidney, and pulmonary systems, and sensitivity to chemicals to be used on the job.

(2) General physical examination with emphasis on liver, kidney, and pulmonary system.

(3) Determination of the employee's physical and psychological ability to wear respiratory protective equipment and to perform job-related tasks.

(4) Determination of baseline values of biological indices for later comparison to changes associated with exposure to paint systems and thinners or blast media, which include: liver function tests to include SGOT, SGPT, GGPT, alkaline phosphates, bilirubin, complete urinalysis, EKG (employees over age 40), blood urea nitrogen (bun), serum creatinine, pulmonary function test, FVC, and FEV, chest x-ray (if medically indicated), blood lead and ZPP (for individuals where it is known there will be an exposure to materials containing lead), other criteria that may be deemed necessary by the Contractor's physician, and Physician's statements for individual employees that medical status would permit specific task performance.

(5) For lead-based paint removal, the medical requirements of 29 CFR 1926.62 shall also be included.

1.8 CHANGE IN MEDICAL STATUS

Any employee whose medical status has changed negatively due to work related chemical and/or physical agent exposure while working with or around paint systems and thinners, blast media, or other chemicals shall be evaluated by a physician, and the Contractor shall obtain a physicians statement as described in paragraph MEDICAL STATUS prior to allowing the employee to return to those work tasks. The Contractor shall notify the Contracting Officer in writing of any negative changes in employee medical status and the results of the physicians reevaluation statement.

1.9 ENVIRONMENTAL PROTECTION

In addition to the requirements of section 01561 the Contractor shall comply with the following environmental protection criteria.

1.9.1 Waste Classification, Handling, and Disposal

The Contractor shall be responsible for assuring the proper disposal of all hazardous and nonhazardous waste generated during the project. Waste generated from abrasive blasting lead-containing paints with recyclable steel or iron abrasives shall be disposed of as a hazardous waste or shall be stabilized with proprietary pre-blast additives regardless of the results of 40 CFR 261, App II, Mtd 1311. Where stabilization is preferred, the contractor shall employ a proprietary blast additive, that has been blended with the blast media prior to use. Hazardous waste shall be placed in properly labeled closed containers and shall be shielded adequately to prevent dispersion of the waste by wind or water. Any evidence of improper

storage shall be cause for immediate shutdown of the project until corrective action is taken. Nonhazardous waste shall be stored in closed containers separate from hazardous waste storage areas. All hazardous waste shall be transported by a licensed transporter in accordance with 40 CFR 263 and 49 CFR 171, Subchapter C. All nonhazardous waste shall be transported in accordance with local regulations regarding waste transportation. In addition to the number of manifest copies required by 40 CFR 262.22, one copy of each manifest will be supplied to the Contracting Officer prior to transportation.

1.9.2 Containment

The Contractor shall contain debris generated during paint removal operations in accordance with the requirements of SSPC Guide 6, Class 3A. Where required the containment air pressure shall be verified visually. Where required the minimum air movement velocity shall be 100 fpm for cross-draft ventilation or 60 fpm for downdraft ventilation.

1.9.3 Visible Emissions Monitoring

The time of emissions shall be measured in accordance with 40 CFR 60, App A, Mtd 22. Visible emissions shall be monitored for not less than 15 minutes of every hour. Visible emissions for each hour shall be calculated by extrapolation. In no case shall visible emissions extend greater than 150 feet in any direction horizontal from the containment. In no case shall visible emissions be observed in the area of any sensitive receptor. If such emissions occur the job shall be shut down immediately and corrective action taken. The foreman shall be notified whenever visible emissions exceed 40 seconds in a 1 hour period. The foreman shall be notified and the job shall be shut down and corrective action taken whenever visible emissions exceed 75 seconds in a 2 hour period. Total observed visible emissions from the containment shall not exceed 1 percent of the work day. Shutdown and corrective action shall be taken by the Contractor to prevent such an occurrence. The Contractor shall document each time that the work is halted due to a violation of the visible emissions criteria. Documentation shall include the cause for shutdown and the corrective action taken to resolve the problem.

1.9.4 Air Quality Monitoring

1.9.4.1 TSP Monitoring

The Contractor shall perform TSP monitoring. The positioning of air monitoring equipment shall be in accordance with 40 CFR 58, App E, Subpart (8). In addition, a minimum of two TSP monitors shall be used at the project site, one down wind from the project and one in the area of greatest public access (e.g. playground, school yard, or homeowner's yard).

TSP-lead monitoring shall be conducted in accordance with 40 CFR 50, App B.

When the project is in an area where there are critical receptors nearby, monitoring shall be conducted throughout the entire period that abrasive blasting and cleanup operations are performed. Otherwise, monitoring shall be performed 4 of the first 8 days and on a regular basis thereafter for a sum total of 25 percent of the time surface preparation and debris cleanup are performed. Failure to meet air quality regulatory limits shall require air monitoring to be repeated immediately after corrective actions have been taken. The Contractor shall also conduct preproject TSP monitoring. The preproject TSP monitoring shall be conducted a minimum of 2 weeks prior to the beginning of the project. The monitoring shall continue for a minimum of 3 days to establish background levels. A report of the results

shall be submitted to the Contracting Officer within 48 hours and shall include:

(1) Name and location of jobsite.

(2) Date of monitoring.

(3) Time of monitoring (i.e., time monitoring begins and ends each day).

(4) Identification and serial number of monitoring units.

(5) Drawing showing specific location of monitoring units.

(6) Drawing showing specific location of paint removal operation and the method of removal or work activity being performed.

(7) Wind direction and velocity.

(8) A flow chart verifying the rate of air flow across the filter throughout the sampling period.

(9) Name and address of laboratory.

(10) Laboratory test procedure.

(11) Laboratory test results.

(12) Signatures of field and laboratory technicians conducting the work.

1.9.5 Water Quality

The Contractor shall conduct operations in such a manner that lead-containing and other hazardous paint debris do not contaminate the water and so that NPDES permits per EPA regulation 40 CFR 122 are not required for the project. In the event that there are any releases of lead paint debris into the waterways, with reportable quantities of hazardous substances designated pursuant to Section 311 of the Clean Water Act, they shall be reported to the EPA in accordance with 40 CFR 117 and 40 CFR 355. Releases or spills that carry into waterways or storm sewers shall be thoroughly documented. The documentation shall include the time and location of the release, amount of material released, actions taken to clean up the debris, amount of debris recovered, and corrective action taken to avoid a reoccurrence. Releases shall also be reported to the Coast Guard and other state and local authorities as appropriate. If the release is equivalent to 10 pounds or more of lead-containing material in a 24-hour period, it is considered to be a reportable quantity under CERCLA.

The Contractor shall comply with 40 CFR 302.

1.9.6 Soil Quality

The Contractor shall establish and implement practices and procedures for preventing contamination of the soil from the removal of lead-containing or other hazardous paints. Unless otherwise directed by the Contracting Officer, soil shall be considered to have been contaminated by the Contractor's operation if an increase in the total lead content of 100 PPM or greater over background levels occurs. For purposes of computing the increase compute the mean background levels and the mean post-removal

levels. The 100 PPM criteria is met if the difference between the means is less than 100 PPM plus the 95 percent confidence limit. Soil sampling and testing shall be conducted prior to the beginning of the project and after the project is completed. Interim testing may also be performed in the event the Contractor or Contracting Officer wants to confirm that the containment system and work practices continue to provide satisfactory protection of the soil. Unless otherwise directed by the Contracting Officer, the following minimum test locations shall be selected for soil analysis. Two locations shall be selected beneath or immediately adjacent to the structure being prepared, and additional samples shall be taken within 100 feet in each direction of the project (i.e., N, S, E, W) in which soil is present. The number of soil sample locations shall be sufficient to adequately characterize the soil contaminant levels within and around the project area. Five composite samples shall be collected at each location. Each of the five samples shall be comprised of five individual plugs of soil combined in a single bag. The composite samples at each location shall be collected using the following procedure:

a. Place a 1-square foot template at each location.

b. Remove a sample of soil 3/4 inch in diameter and 1/2 inch in depth at the center of the template and at each of the four corners. Place the five soil plugs into a single bag. This represents one of the three samples to be removed at a given location.

c. Move the template 1 inch in any direction and repeat the process to collect the second sample. Place all plugs in a separate bag. Move the template 1 inch farther to collect the third sample.

d. Identify each sample bag with the date, specific location of the sample, name and signature of the sampling technician, and complete chain of custody records.

e. It is critical that the specific location of each sample be thoroughly measured and documented as the final project testing (and any interim testing) must be sampled in the precise locations.

Three samples collected at each location shall be analyzed. One of the remaining two samples shall be maintained by the Contractor for the duration of the project and the other by the Contracting Officer in the event reanalysis is required. Lead-containing samples shall be analyzed in accordance with EPA testing guidance as published in 40 CFR 261, App III, by a laboratory listed by the American Industrial Hygiene Association (AIHA) as being proficient in conducting the test. The Contractor shall note that if it is determined that contamination of the soil has occurred as a result of the paint removal operations, TCLP testing will be employed to determine if the soil must be handled and disposed of as a hazardous waste. The initial sampling of the soil for total lead content does not establish whether the soil would be considered hazardous by TCLP testing. As a result, at the Contractor's option, additional prework soil samples may be removed (minimum of 105 grams is required for a single test at each site) to conduct TCLP testing to establish whether the soil would be classified as hazardous prior to project startup. In the event that there is a release of lead paint debris onto the soil and if the release is 10 pounds or more of lead-containing material in a 24-hour period, it is considered to be a reportable quantity under CERCLA. The Contractor shall comply with 40 CFR 302. The Contractor shall thoroughly document the occurrence of any spills of lead debris into the soil. The documentation shall include the time and location of the release, amount of material

released, actions taken to clean up the debris, amount of debris reclaimed, and corrective action taken to avoid a reoccurrence. The documentation shall be provided to the Contracting Officer and shall also include the results of laboratory testing.

1.10 PAINT PACKAGING, DELIVERY, AND STORAGE

Paints shall be processed and packaged to ensure that within a period of one year from date of manufacture, they will not gel, liver, or thicken deleteriously, or form gas in the closed container. Paints, unless otherwise specified or permitted, shall be packaged in standard containers not larger than 5 gallons, with removable friction or lug-type covers. Containers for vinyl-type paints shall be lined with a coating resistant to solvents in the formulations and capable of effectively isolating the paint from contact with the metal container. Each container of paint or separately packaged component thereof shall be labeled to indicate the purchaser's order number, date of manufacture, manufacturer's batch number, quantity, color, component identification and designated name, and formula or specification number of the paint together with special labeling instructions, when specified. Paint shall be delivered to the job in unbroken containers. Paints that can be harmed by exposure to cold weather shall be stored in ventilated, heated shelters. All paints shall be stored under cover from the elements and in locations free from sparks and flames.

PART 2 PRODUCTS

2.1 SPECIAL PAINT FORMULAS

Special paints shall have the composition as indicated in the formulas listed herein. Where so specified, certain components of a paint formulation shall be packaged in separate containers for mixing on the job. If not specified or otherwise prescribed, the color shall be that naturally obtained from the required pigmentation.

2.2 PAINT FORMULATIONS

Special paint formulas shall comply with the following:

2.2.1 Formula V-102e, Vinyl-Type Ready-Mixed Aluminum Impacted Immersion Coating

INGREDIENTS	PERCENT BY MASS
Vinyl Resin, Type 3	18.2
Aluminum Powder	8.3
Diisodecyl Phthalate	3.1
Methyl Isobutyl Ketone	33.8
Toluene	36.6
	100.0

a. The paint shall be furnished with the aluminum pigment mixed into the vehicle.

b. The viscosity of the paint shall be between 60 and 90 seconds using ASTM D 1200 and a No. 4 Ford cup.

2.2.2 Formula V-766e, Vinyl-Type White (or Gray) Impacted Immersion Coating

INGREDIENTS	PERCENT BY MASS
Vinyl Resin, Type 3	5.6
Vinyl Resin, Type 4	11.6
Titanium Dioxide and (for Gray) Carbon Black	13.0
Diisodecyl Phthalate	2.9
Methyl Isobutyl Ketone	32.0
Toluene	34.7
Ortho-Phosphoric Acid	0.2
	100.0

a. The dispersion of pigment shall be accomplished by means of pebble mills or other approved methods to produce a fineness of grind (ASTM D 1210) of not less than 7 on the Hegman scale. Grinding in steel-lined or steel-ball mills will not be permitted. No grinding aids, antisettling agents, or any other materials except those shown in the formula will be permitted. The paint shall show the proper proportions of specified materials when analyzed by chromatographic and/or spectrophotometric methods. The ortho-phosphoric acid shall be measured accurately and diluted with at least four parts of ketone to one part of acid and it shall be slowly incorporated into the finished paint with constant and thorough agitation.

b. The viscosity of the paint shall be between 60 and 90 seconds using ASTM D 1200 and a No. 4 Ford cup.

c. The white and gray paints shall be furnished in the volume ratio designated by the purchaser. The gray paint shall contain no pigments other than those specified. Enough carbon black shall be included to produce a dry paint film having a reflectance of 20-24 (ASTM E 1347). The resulting gray color shall approximate color 26231 of FED-STD-595.

2.2.3 Formula VZ-108d, Vinyl-Type Zinc-Rich Impacted Immersion Coating

INGREDIENTS	PERCENT BY WEIGHT	POUNDS	GALLONS
COMPONENT A			
Vinyl Resin, Type 3	16.6	109.2	9.65
Methyl Isobutyl Ketone	80.6	528.9	79.30
Suspending Agent E	0.7	4.6	0.28
Suspending Agent F	0.4	2.7	0.19
Methanol	0.5	3.3	0.50
Synthetic Iron Oxide (Red)	1.2	7.9	0.19
	100.0	656.6	90.11
COMPONENT B			
Silane B	100.0	4.1	0.47
COMPONENT C			
Zinc Dust	100.0	550.0	9.42
			100.00

INGREDIENTS	PERCENT BY WEIGHT	POUNDS	GALLONS (mixed paint)

a. The iron oxide and suspending agents shall be dispersed into the vehicle (Component A) to a fineness of grind of not less than 4 on the Hegman scale (ASTM D 1210). Grinding in steel-lined containers or using steel-grinding media shall not be permitted. The sole purpose of the iron oxide pigment is to produce a contrasting color. A red iron oxide-type 3 vinyl resin vehicle paste may be used in place of dry iron oxide provided compensating adjustment are made in the additions of Type 3 resin and methyl isobutyl ketone. The finished product with zinc dust added shall produce a paint which has a red tone upon drying and a reflectance of not more than 16 (ASTM E 1347).

b. VZ-108d paint shall be supplied as a kit. Each kit shall consist of 4.5 gallons (33.1 pounds) of Component A in a 5-gallon lug closure type pail, 27.5 pounds of zinc dust (Component C) packaged in a 1-gallon plastic pail, and 3 fluid ounces of silane (Component B) packaged in a glass bottle of suitable size having a polyethylene lined cap. The bottle of silane shall be placed on the zinc dust in the 1-gallon pail. In addition to standard labeling requirements, each container of each component shall be properly identified as to component type and each container label of Component A shall carry the following: MIXING AND APPLICATION INSTRUCTIONS: WARNING - THIS PAINT WILL NOT ADHERE TO STEEL SURFACES UNLESS COMPONENT B IS ADDED. Remove the 3 ounces of bottled Component B (silane) from the Component C (zinc dust) container and add to the base paint Component A) with thorough stirring. Then sift the zinc dust into the base paint while it is being vigorously agitated with a power-driven stirrer and continue the stirring until the zinc dust has been dispersed. The mixed paint shall at some point be strained through a 30-60 mesh screen to prevent zinc dust slugs from reaching the spray gun nozzle. The paint shall be stirred continuously during application at a rate that will prevent settling. If spraying is interrupted for longer than 15 minutes, the entire length of the hose shall be whipped vigorously to redisperse the zinc. If the spraying is to be interrupted for more than 1 hour, the hose shall be emptied by blowing the paint back into the paint pot. Thinning will not normally be required when ambient temperatures are below about 80 degrees F, but when the ambient and steel temperatures are higher, methyl isoamyl ketone (MIAK) or methyl isobutyl ketone (MIBK) should be used. If paint is kept covered at all times, its pot life will be about 8 days.

2.2.4 Formula P-38, Aluminum Phenolic Finish Coat

This material shall be a ready-mixed aluminum paint. The pigment shall be leafing aluminum powder or paste conforming to the requirements of ASTM D 962 Types I or II, Class B, Medium. The vehicle shall be a phenolic resin varnish of 33-gallon oil length. The resin portion of the vehicle shall be a dry granular phenol-formaldehyde resin made from aliphatic para-substituted phenols with substituting groups containing four to eight carbon atoms. The oil portion of the vehicle shall consist of not less than 80% tung oil conforming to ASTM D 12 and the remainder shall be alkali refined linseed oil. The vehicle shall not contain rosin derivatives. Paint solvents shall consist of aliphatic and aromatic hydrocarbons as necessary. The paint shall meet the requirements of paragraphs Quantitative Requirements and Water Resistance.

2.2.4.1 Quantitative Requirements

The paint shall have the following properties.

Characteristics	Requirement (minimum/maximum)
Pigment, percent by weight of paint	13 / --
Volatile, percent by weight of paint, ASTM D 2369	-- / 45
Nonvolatile vehicle, percent by weight of paint	42 / --
Viscosity, seconds, ASTM D 1200	35 / 45
Flash point, Degrees F (C), ASTM D 4206	86 (30)/ --
Leafing, percent	50 / --
Density, pounds per gallon, ASTM D 1475	8 / --
Dry, set-to-touch, hours, ASTM D 1640	0.5 / 2
Dry, to recoat, hours, ASTM D 1640	-- / 16

2.2.4.2 Water Resistance

Prepare a test panel by spray applying two coats of paint to a 3 by 6 inch solvent cleaned matte-finish steel test plate. Each coat shall have a dry film thickness of approximately 2.0 mils. Allow 24 hours dry time between coats. Air dry the prepared panel 72 hours and immerse in distilled water at73 +/- 2F for 72 hours in accordance with ASTM D 1308. The test paint shall exhibit no wrinkling or blistering immediately upon removal of the panel from the water. The paint shall be no more than slightly affected when examined two hours after removal and after 24 hours shall show no more than a slight visible whitening or dulling in comparison to the unexposed film.

2.3 INGREDIENTS FOR SPECIAL PAINT FORMULAS

The following ingredient materials and thinners apply only to those special paints whose formulas are shown above in detail.

2.3.1 Pigments and Suspending Agents

2.3.1.1 Aluminum Powder

For vinyl paint aluminum powder shall conform to ASTM D 962, Type 1, Class B.

2.3.1.2 Carbon Black

Carbon black shall conform to ASTM D 561, Type I or II.

2.3.1.3 Zinc Dust

Zinc dust pigment shall conform to ASTM D 520, Type II.

2.3.1.4 Iron Oxide

Iron oxide, (Dry) synthetic (red), shall conform to ASTM D 3721. In addition, the pigment shall have a maximum oil absorption of 24 and a specific gravity of 4.90 to 5.20 when tested in accordance with ASTM D 281 and ASTM D 153, Method A, respectively. When the pigment is dispersed into specified vinyl paint formulation, the paint shall have color approximating FED-STD-595 color 10076 (dark red paint), and shall show no evidence of incompatibility or reaction between pigment and other components after 6

months storage.

2.3.1.5 Titanium Dioxide

Titanium dioxide in vinyl paint Formula V-766e shall be one of the following: Kronos 2160 or 2101, Kronos, Inc.; Ti-Pure 960, E.I. Dupont DeNemours and Co., Inc.

2.3.1.6 Suspending Agent E

Suspending Agent E shall be a light cream colored finely divided powder having a specific gravity of 2 to 2.3. It shall be an organic derivative of magnesium aluminum silicate mineral capable of minimizing the tendency of zinc dust to settle hard without increasing the viscosity of the paint appreciably. MPA-14, produced by RHEOX, Inc., has these properties.

2.3.1.7 Suspending Agent F

Suspending Agent F shall be a light cream colored finely divided powder having a specific gravity of approximately 1.8. It shall be an organic derivative of a special montmorillonite (trialkylaryl ammonium hectorite). Bentone 27, produced by RHEOX, Inc., has these properties.

2.3.2 Resins, Plasticizer, and Catalyst

2.3.2.1 Diisodecyl Phthalate

Diisodecyl Phthalate shall have a purity of not less than 99.0 percent, shall contain not more than 0.1 percent water, and shall have an acid number (ASTM D 1045) of not more than 0.10.

2.3.2.2 Vinyl Resin, Type 3

Vinyl resin, Type 3, shall be a vinyl chloride-acetate copolymer of medium average molecular weight produced by a solution polymerization process and shall contain 85 to 88 percent vinyl chloride and 12 to 15 percent vinyl acetate by weight. The resin shall have film-forming properties and shall, in specified formulations, produce results equal to Vinylite resin VYHH, as manufactured by the Union Carbide Corporation.

2.3.2.3 Vinyl Resin, Type 4

Vinyl resin, Type 4, shall be a copolymer of the vinyl chloride-acetate type produced by a solution polymerization process, shall contain (by weight) 1 percent interpolymerized dibasic acid, 84 to 87 percent vinyl chloride, and 12 to 15 percent vinyl acetate. The resin shall have film-forming properties and shall, in the specified formulations, produce results equal to Vinylite resin VMCH, as manufactured by the Union Carbide Corporation.

2.3.2.4 Ortho-phosphoric Acid

Ortho-phosphoric acid shall be a chemically pure 85-percent grade.

2.3.3 Solvent and Thinners

2.3.3.1 Methanol

Methanol (methyl alcohol) shall conform to ASTM D 1152.

2.3.3.2 Methyl Ethyl Ketone

Methyl ethyl ketone (MEK) shall conform to ASTM D 740.

2.3.3.3 Methyl Isobutyl Ketone

Methyl isobutyl ketone (MIBK) shall conform to ASTM D 1153.

2.3.3.4 Methyl Isoamyl Ketone

Methyl isoamyl ketone (MIAK) shall conform to ASTM D 2917.

2.3.3.5 Toluene

Toluene shall conform to ASTM D 841.

2.3.4 Silane B

Silane B for Formula VZ-108d shall be N-beta-(aminoethyl)-gamma-aminopropyltrimethoxy silane. Silane A-1120, produced by the C.K. Witco Corporation, and Silane Z-6020, produced by Dow Corning Corporation, are products of this type.

2.4 TESTING

2.4.1 Chromatographic Analysis

Solvents in vinyl paints and thinners shall be subject to analysis by programmed temperature gas chromatographic methods and/or spectrophotometric methods, employing the same techniques that give reproducible results on prepared control samples known to meet the specifications. If the solvent being analyzed is of the type consisting primarily of a single chemical compound or a mixture or two or more such solvents, interpretation of the test results shall take cognizance of the degree of purity of the individual solvents as commercially produced for the paint industry.

2.4.2 Vinyl Paints

Vinyl paints shall be subject to the following adhesion test. When V-766 or V-106 formulations are tested, 5 to 7 mils (dry) shall be spray applied to mild steel panels. The steel panels shall be essentially free of oil or other contaminants that may interfere with coating adhesion. The test panels shall be dry blast cleaned to a White Metal grade which shall be in compliance with SSPC SP 5. The surface shall have an angular profile of 2.0 to 2.5 mils as measured by ASTM D 4417, Method C. When V-102 or V-103 formulations are tested, they shall be spray applied over 1.5 to 2.5 mils (dry) of V-766 or V-106 known to pass this test. When VZ-108 is tested, the coating shall be mixed in its proper proportions and then spray applied to a dry film thickness of 1.5 to 2.5 mils above the blast profile. The VZ-108 shall be top coated with a V-766 known to pass this test. In all cases, the complete system shall have a total dry film thickness of 5 to 7 mils above the blast profile. After being air dried for 2 hours at room temperature, the panel shall be dried in a vertical position for 16 hours at 120 degrees F. After cooling for 1 hour, the panel shall be immersed in tap water at 85 to 90 degrees F for 48 to 72 hours. Immediately upon removal, the panel shall be dried with soft cloth and examined for adhesion as follows: With a pocket knife or other suitable instrument, two parallel

cuts at least 1 inch long shall be made 1/4 to 3/8 inch apart through the paint film to the steel surface. A third cut shall be made perpendicular to and passing through the end of the first two. With the tip of the knife blade, the film shall be loosened from the panel from the third cut between the parallel cuts for a distance of 1/8 to 1/4 inch. With the panel being held horizontally, the free end of the paint film shall be grasped between the thumb and forefinger and pulled vertically in an attempt to remove the film as a strip from between the first two cuts. The strip of paint film shall be removed at a rate of approximately 1/10 inch per second and shall be maintained in a vertical position during the process of removal. The adhesion is acceptable if the strip of paint breaks when pulled or if the strip elongates a minimum of 10 percent during its removal. Paints not intended to be self-priming shall exhibit no delamination from the primer.

PART 3 EXECUTION

3.1 CLEANING AND PREPARATION OF SURFACES TO BE PAINTED

3.1.1 General Requirements

Surfaces to be painted shall be cleaned before applying paint or surface treatments. Deposits of grease or oil shall be removed in accordance with SSPC SP 1, prior to mechanical cleaning. Solvent cleaning shall be accomplished with mineral spirits or other low toxicity solvents having a flash point above 100 degrees F. Clean cloths and clean fluids shall be used to avoid leaving a thin film of greasy residue on the surfaces being cleaned. Items not to be prepared or coated shall be protected from damage by the surface preparation methods. Machinery shall be protected against entry of blast abrasive and dust into working parts. Cleaning and painting shall be so programmed that dust or other contaminants from the cleaning process do not fall on wet, newly painted surfaces, and surfaces not intended to be painted shall be suitably protected from the effects of cleaning and painting operations. Welding of, or in the vicinity of, previously painted surfaces shall be conducted in a manner to prevent weld spatter from striking the paint and to otherwise reduce coating damage to a minimum; paint damaged by welding operations shall be restored to original condition. Surfaces to be painted that will be inaccessible after construction, erection, or installation operations are completed shall be painted before they become inaccessible.

3.1.2 Ferrous Surfaces Subject to Atmospheric Exposures

Ferrous surfaces that are to be continuously in exterior or interior atmospheric exposure and other surfaces as directed shall be cleaned by means of power tools or by dry blasting to the brush-off grade. Cleaning and priming shall be done in the shop unless otherwise directed or permitted. Power tool cleaning shall conform to the requirements of SSPC SP 3. Brush-off blast cleaning shall conform to the requirements of SSPC SP 7. Welds and adjoining surfaces within a few inches (centimeters) thereof shall be cleaned of weld flux, spatter, and other harmful deposits by blasting, power impact tools, power wire brush, or such combination of these and other methods as may be necessary for complete removal of each type of deposit. The combination of cleaning methods need not include blasting when preparation of the overall surfaces is carried out by the power tool method. However, brush scrubbing and rinsing with clean water, after mechanical cleaning is completed, will be required unless the latter is carried out with thoroughness to remove all soluble alkaline deposits. Wetting of the surfaces during water-washing operations shall be limited to the weld area required to be treated, and such areas shall be dry before

painting. Welds and adjacent surfaces cleaned thoroughly by blasting alone will be considered adequately prepared provided that weld spatter not dislodged by the blast stream shall be removed with impact or grinding tools. All surfaces shall be primed as soon as practicable after cleaning but prior to contamination or deterioration of the prepared surfaces. To the greatest degree possible, steel surfaces shall be cleaned (and primed) prior to lengthy outdoor storage.

3.1.3 Ferrous Surfaces Subject to Severe Exposure

Ferrous surfaces subject to extended periods of immersion or as otherwise required shall be dry blast-cleaned to SSPC SP 5. The blast profile, unless otherwise specified, shall be 1.5 to 2.5 mils as measured by ASTM D 4417, Method C. Appropriate abrasive blast media shall be used to produce the desired surface profile and to give an angular anchor tooth pattern. If recycled blast media is used, an appropriate particle size distribution shall be maintained so that the specified profile is consistently obtained. Steel shot or other abrasives that do not produce an angular profile shall not be used. Weld spatter not dislodged by blasting shall be removed with impact or grinding tools and the areas reblasted prior to painting. Surfaces shall be dry at the time of blasting. Blast cleaning to SSPC SP 5 shall be done in the field and, unless otherwise specifically authorized, after final erection. Within 8 hours after cleaning, prior to the deposition of any detectable moisture, contaminants, or corrosion, all ferrous surfaces blast cleaned to SSPC SP 5 shall be cleaned of dust and abrasive particles by brush, vacuum cleaner, and/or blown down with clean, dry, compressed air, and given the first coat of paint. Upon written request by the Contractor, the Contracting Officer may authorize mill or shop cleaning of assembled or partially assembled components specified to receive one of the vinyl-type paint systems. The surfaces, if shop blasted, shall be shop coated with the first and second coats of the specified paint system except that the epoxy zinc-rich primed surfaces shall receive an extra single spray coat of the zinc primer at the time field painting is started, as specified in the paint system instructions. The shop coating shall be maintained in good condition by cleaning and touching up of areas damaged during the construction period. If pinpoint or general rusting appears, surfaces shall be reblasted and repainted at no added cost to the Government. Prior to the field application of subsequent coats, soiled areas of the shop coating shall be thoroughly cleaned and all welds or other unpainted or damaged areas shall be cleaned and coated in a manner to make them equivalent to adjacent, undamaged paint surfaces.

3.2 PAINT APPLICATION

3.2.1 General

The finished coating shall be free from holidays, pinholes, bubbles, runs, drops, ridges, waves, laps, excessive or unsightly brush marks, and variations in color, texture, and gloss. Application of initial or subsequent coatings shall not commence until the Contracting Officer has verified that atmospheric conditions and the surfaces to be coated are satisfactory. Each paint coat shall be applied in a manner that will produce an even, continuous film of uniform thickness. Edges, corners, crevices, seams, joints, welds, rivets, corrosion pits, and other surface irregularities shall receive special attention to ensure that they receive an adequate thickness of paint. Spray equipment shall be equipped with traps and separators and where appropriate, mechanical agitators, pressure gauges, pressure regulators, and screens or filters. Air caps, nozzles, and needles shall be as recommended by the spray equipment manufacturer for

the material being applied. Airless-type spray equipment may be used only on broad, flat, or otherwise simply configured surfaces, except that it may be employed for general painting if the spray gun is equipped with dual or adjustable tips of proper types and orifice sizes. Airless-type equipment shall not be used for the application of vinyl paints.

3.2.2 Mixing and Thinning

Paints shall be thoroughly mixed, strained where necessary, and kept at a uniform composition and consistency during application. Paste or dry-powder pigments specified to be added at the time of use shall, with the aid of powered stirrers, be incorporated into the vehicle or base paint in a manner that will produce a smooth, homogeneous mixture free of lumps and dry particles. Where necessary to suit conditions of the surface temperature, weather, and method of application, the paint may be thinned immediately prior to use. Thinning shall generally be limited to the addition of not more than 1 pint per gallon of the proper thinner; this general limitation shall not apply when more specific thinning instructions are provided. Paint that has been stored at low temperature, shall be brought up to at least 70 degrees F before being mixed and thinned, and its temperature in the spray tank or other working container shall not fall below 60 degrees F during the application. Paint that has deteriorated in any manner to a degree that it cannot be restored to essentially its original condition by customary field-mixing methods shall not be used and shall be removed from the project site. Paint and thinner that is more than 1 year old shall be resampled and resubmitted for testing to determine its suitability for application.

3.2.3 Atmospheric and Surface Conditions

Paint shall be applied only to surfaces that are above the dew point temperature and that are completely free of moisture as determined by sight and touch. Paint shall not be applied to surfaces upon which there is detectable frost or ice. Except as otherwise specified, the temperature of the surfaces to be painted and of air in contact therewith shall be not less than 45 degrees F during paint application nor shall paint be applied if the surfaces can be expected to drop to 32 degrees F or lower before the film has dried to a reasonably firm condition. During periods of inclement weather, painting may be continued by enclosing the surfaces and applying artificial heat, provided the minimum temperatures and surface dryness requirements prescribed previously are maintained. Paint shall not be applied to surfaces heated by direct sunlight or other sources to temperatures that will cause detrimental blistering, pinholing, or porosity of the film.

3.2.4 Time Between Surface Preparation and Painting

Surfaces that have been cleaned and/or otherwise prepared for painting shall be primed as soon as practicable after such preparation has been completed but, in any event, prior to any deterioration of the prepared surface.

3.2.5 Method of Paint Application

Unless otherwise specified, paint shall be applied by brush or spray to ferrous and nonferrous metal surfaces. Special attention shall be directed toward ensuring adequate coverage of edges, corners, crevices, pits, rivets, bolts, welds, and similar surface irregularities. Other methods of application to metal surfaces shall be subject to the specific approval of

the Contracting Officer. Paint on plaster, concrete, or other nonmetallic surfaces shall be applied by brush, roller, and/or spray.

3.2.6 Coverage and Film Thickness

Film thickness or spreading rates shall be as specified hereinafter. Where no spreading rate is specified, the paint shall be applied at a rate normal for the type of material being used. In any event, the combined coats of a specified paint system shall completely hide base surface and the finish coats shall completely hide undercoats of dissimilar color.

3.2.6.1 Measurement on Ferrous Metal

Where dry film thickness requirements are specified for coatings on ferrous surfaces, measurements shall be made with a gage qualified in accordance with paragraph Coating Thickness Gage Qualification. They shall be calibrated and used in accordance with ASTM D 1186. They shall be calibrated using plastic shims with metal practically identical in composition and surface preparation to that being coated, and of substantially the same thickness (except that for measurements on metal thicker than 1/4 inch, the instrument may be calibrated on metal with a minimum thickness of 1/4 inch). Frequency of measurements shall be as recommended for field measurements by ASTM D 1186 and reported as the mean for each spot determination. The instruments shall be calibrated or calibration verified prior to, during, and after each use.

3.2.7 Progress of Painting Work

Where field painting on any type of surface has commenced, the complete painting operation, including priming and finishing coats, on that portion of the work shall be completed as soon as practicable, without prolonged delays. Sufficient time shall elapse between successive coats to permit them to dry properly for recoating, and this period shall be modified as necessary to suit adverse weather conditions. Paint shall be considered dry for recoating when it feels firm, does not deform or feel sticky under moderate pressure of the finger, and the application of another coat of paint does not cause film irregularities such as lifting or loss of adhesion of the undercoat. All coats of all painted surfaces shall be unscarred and completely integral at the time of application of succeeding coats. At the time of application of each successive coat, undercoats shall be cleaned of dust, grease, overspray, or foreign matter by means of airblast, solvent cleaning, or other suitable means. Cement and mortar deposits on painted steel surfaces, not satisfactorily removed by ordinary cleaning methods, shall be brush-off blast cleaned and completely repainted as required. Undercoats of high gloss shall, if necessary for establishment of good adhesion, be scuff sanded, solvent wiped, or otherwise treated prior to application of a succeeding coat. Field coats on metal shall be applied after erection except as otherwise specified and except for surfaces to be painted that will become inaccessible after erection.

3.2.8 Contacting Surfaces

When riveted or ordinary bolted contact is to exist between surfaces of ferrous or other metal parts of substantially similar chemical composition, such surfaces will not be required to be painted, but any resulting crevices shall subsequently be filled or sealed with paint. Contacting metal surfaces formed by high-strength bolts in friction-type connections shall not be painted. Where a nonmetal surface is to be in riveted or

bolted contact with a metal surface, the contacting surfaces of the metal shall be cleaned and given three coats of the specified primer. Unless otherwise specified, corrosion-resisting metal surfaces, including cladding therewith, shall not be painted.

3.2.9 Drying Time Prior to Immersion

Minimum drying periods after final coat prior to immersion shall be: epoxy systems at least 5 days, vinyl-type paint systems at least 3 days, and cold-applied coal tar systems at least 7 days. Minimum drying periods shall be increased twofold if the drying temperature is below 65 degrees F and/or if the immersion exposure involves considerable abrasion.

3.2.10 Protection of Painted Surfaces

Where shelter and/or heat are provided for painted surfaces during inclement weather, such protective measures shall be maintained until the paint film has dried and discontinuance of the measures is authorized. Items that have been painted shall not be handled, worked on, or otherwise disturbed until the paint coat is fully dry and hard. All metalwork coated in the shop or field prior to final erection shall be stored out of contact with the ground in a manner and location that will minimize the formation of water-holding pockets; soiling, contamination, and deterioration of the paint film, and damaged areas of paint on such metalwork shall be cleaned and touched up without delay. The first field coat of paint shall be applied within a reasonable period of time after the shop coat and in any event before weathering of the shop coat becomes extensive.

3.2.11 Vinyl Paints

3.2.11.1 General

Vinyl paints shall be spray applied, except that areas inaccessible to spraying shall be brushed. All of the vinyl paints require thinning for spray application except the zinc-rich vinyl paint (Formula VZ 108d) which will normally require thinning only under certain weather conditions. Thinners for vinyl paints shall be as follows:

APPROXIMATE AMBIENT AIR TEMPERATURE (Degrees F [Degrees C])	
Below 50	MEK
50 - 70	MIBK
Above 70	MIAK

The amount of thinner shall be varied to provide a wet spray and avoid deposition of particles that are semidry when they strike the surface. Vinyl paints shall not be applied when the temperature of the ambient air and receiving surfaces is less than 35 degrees F nor when the receiving surfaces are higher than 125 degrees F. Each spray coat of vinyl paint shall consist of a preliminary extra spray pass on edges, corners, interior angles, pits, seams, crevices, junctions of joining members, rivets, weld lines, and similar surface irregularities followed by an overall double spray coat. A double spray coat of vinyl-type paint shall consist of applying paint to a working area of not less than several hundred square feet (meters) in a single, half-lapped pass, followed after drying to at least a near tack-free condition by another spray pass applied at the same coverage rate and where practicable at right angles to the first. Rivets, bolts, and similar surface projections shall receive sprayed paint from

every direction to ensure complete coverage of all faces. Pits, cracks, and crevices shall be filled with paint insofar as practicable, but in any event, all pit surfaces shall be thoroughly covered and all cracks and crevices shall be sealed off against the entrance of moisture. Fluid and atomization pressures shall be kept as low as practicable consistent with good spraying results. Unless otherwise specified, not more than 2.0 mils, average dry film thickness, of vinyl paint shall be applied per double spray coat. Except where otherwise indicated, an undercoat of the vinyl-type paint may receive the next coat any time after the undercoat is tack-free and firm to the touch, provided that no speedup or delay in the recoating schedule shall cause film defects such as sags, runs, air bubbles, air craters, or poor intercoat adhesion. Neither the prime coat nor any other coat shall be walked upon or be subjected to any other abrading action until it has hardened sufficiently to resist mechanical damage.

3.2.11.2 Vinyl Zinc-Rich Primer

Primer shall be field mixed combining components A, B, and C. Mixing shall be in accordance with label instructions. After mixing, the paint shall be kept covered at all times to avoid contamination and shall be applied within 8 days after it is mixed. When the ambient and/or steel temperature is below about 80 degrees F, the paint will not normally require thinning; however, the paint shall at all times contain sufficient volatiles (thinners) to permit it to be satisfactorily atomized and to provide a wet spray and to avoid deposition of particles that are semidry when they reach the surface. The paint shall be stirred continuously during application at a rate that will prevent the zinc dust from settling. When spraying is resumed after any interruption of longer than 15 minutes, the entire length of the material hose shall be whipped vigorously until any settled zinc is redispersed. Long periods of permitting the paint to remain stagnant in the hose shall be avoided by emptying the hoses whenever the painting operation is to be suspended for more than 1 hour. The material (paint) hoses shall be kept as short as practicable, preferably not more than 50 feet in length. Equipment used for spraying this zinc primer shall not be used for spraying other vinyl-type paints without first being thoroughly cleaned, since many of the other paints will not tolerate zinc contamination; no type of hot spray shall be used. An average dry film thickness of up to 2.5 mils may be applied in one double-spray coat. Unless specifically authorized, not more than 8 days shall elapse after application of a VZ-108d zinc-rich coat before it receives a succeeding coat.

3.2.11.3 Vinyl Paints

Vinyl Paints (Formulas V-102e, V-103c, V-106d, and V-766e) are ready-mixed paints designed to be spray applied over a wide range of ambient temperatures by field thinning with the proper type and amount of thinner. For spray application, they shall be thinned as necessary up to approximately 25 percent (1 quart per gallon of base paint) with the appropriate thinner; when ambient and steel temperatures are above normal, up to 40-percent thinning may be necessary for satisfactory application.

3.3 PAINT SYSTEMS APPLICATION

The required paint systems and the surfaces to which they shall be applied are shown in this paragraph, and/or in the drawings. Supplementary information follows.

3.3.1 Fabricated and Assembled Items

Items that have been fabricated and/or assembled into essentially their final form and that are customarily cleaned and painted in accordance with the manufacturer's standard practice will be exempted from equivalent surface preparation and painting requirements described herein, provided that:

a. Surfaces primed (only) in accordance with such standard practices are compatible with specified field-applied finish coats.

b. Surfaces that have been primed and finish painted in accordance with the manufacturer's standard practice are of acceptable color and are capable of being satisfactorily touched up in the field.

c. Items expressly designated herein to be cleaned and painted in a specified manner are not coated in accordance with the manufacturer's standard practice if different from that specified herein.

3.3.2 Surface Preparation

The method of surface preparation and pretreatment shown in the tabulation of paint systems is for identification purposes only. Cleaning and pretreatment of surfaces prior to painting shall be accomplished in accordance with detailed requirements previously described.

3.3.3 System No. 2

The first coat shall be brush or spray applied in the shop or field as indicated at a maximum spreading rate of 500 square feet per gallon and touched up in the field as necessary to maintain its integrity at all times. The second or third coats of the system shall be applied in the field at a maximum spreading rate of 450 square feet per gallon. Prior to applying field coats, all field welds, other bare metal, and damaged areas of the shop-primed surfaces shall be cleaned and primed as previously specified except that application shall be by brush.

3.3.4 System No. 3

Paint shall be spray applied to an average dry film thickness of a minimum of 6.0 mils for the completed system and the thickness at any point shall not be less than 5.0 mils. Approximately 3.0 mils of the total dry film thickness shall be built up with Formula V-766e paint. The specified film thickness shall be attained in any event, and any additional coats needed to attain specified thickness shall be applied at no additional cost to the Government. Attaining the specified film thickness in fewer than the prescribed number of coats or spray passes will be acceptable provided the heavier applications do not cause an increase in pinholes, bubbles, blisters, or voids in the dried film and also provided that not more than 2.0 mils (dry film thickness) per double spray coat nor more than 1.0 mil per single spray pass shall be applied at one time.

3.3.5 Protection of Nonpainted Items and Cleanup

Walls, equipment, fixtures and all other items in the vicinity of the surfaces being painted shall be maintained free from damage by paint or painting activities. Paint spillage and painting activity damage shall be promptly repaired.

3.4 INSPECTION

The Contractor shall inspect, document, and report all work phases and operations on a daily basis. As a minimum the daily report shall contain the following:

a. Inspections performed, including the area of the structure involved and the results of the inspection.

b. Surface preparation operations performed, including the area of the structure involved, the mode of preparation, the kinds of solvent, abrasive, or power tools employed, and whether contract requirements were met.

c. Thinning operations performed, including thinners used, batch numbers, and thinner/paint volume ratios.

d. Application operations performed, including the area of the structure involved, mode of application employed, ambient temperature, substrate temperature, dew point, relative humidity, type of paint with batch numbers, elapsed time between surface preparation and application, elapsed time for recoat, condition of underlying coat, number of coats applied, and if specified, measured dry film thickness or spreading rate of each new coating.

3.5 PAINTING SCHEDULES

SYSTEM NO. 2

Items or surfaces to be coated: Floor Stand, Pedestal Base

SURFACE PREPARATION	1st COAT	2nd COAT	3rd COAT
Alternate 1 Power tool or brush-off blast cleaning	SSPC Paint 25 Type I or Type II	P-38 (Aluminum)	P-38 (Aluminum)
Alternate 2 Commercial blast cleaning	SSPC Paint 25 BCS Type I or Type II	P-38 (Aluminum)	P-38 (Aluminum)

SYSTEM NO. 3

Items or surfaces to be coated: Flap Gates, Sluice Gates, Gate Frames, Trash Racks

SURFACE PREPARATION	1st COAT	2nd COAT	3rd COAT	4th COAT
White metal blast cleaning	White Vinyl V-766e (double spray coat)	Gray Vinyl V-766e (double spray coat)	Aluminum Vinyl V-102e (double spray coat)	Aluminum Vinyl V-102e (double spray coat)

-- End of Section --

SECTION 11280

SLUICE GATES

PART 1 GENERAL

1.1 Scope

The work covered by this section consists of furnishing all plant, labor, equipment and materials required to fabricate, install and test the sluice gate assemblies in accordance with the drawings and as specified herein. All components necessary to make the sluice gates assembly operational shall be furnished by the Contractor. The sluice gates shall be a product of a manufacturer who has been manufacturing sluice gates for at least five (5) years and who has regularly engaged in the design and manufacture of precision sluice gates for waste-water treatment plants, water works and flood control projects who can show previous experience for similar heads for conditions herein specified.

1.2 PROJECT/SITE CONDITIONS:

The Contractor shall thoroughly familiarize himself with all details of the work and working conditions to verify dimensions in the field, and shall notify the Contracting Officer of any discrepancies prior to performing any work. The Contractor shall be specifically responsible for the coordination and proper relationship of his work to the structure and work of all trades.

1.3 APPLICABLE PUBLICATIONS

The following publications of the issues listed below, but referred to thereafter by basic designation only, form a part of this specification to the extent indicated by references thereto:

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM) STANDARDS:

ASTM A48-94	GRAY IRON CASTINGS
ASTM A126-95	GRAY IRON CASTINGS FOR VALVES, FLANGES, AND PIPE FITTINGS
ASTM A194-A97	CARBON AND ALLOY STEEL NUTS FOR BOLTS FOR HIGH-PRESSURE AND HIGH-TEMPERATURE SERVICE
ASTM A276-97	STAINLESS AND HEAT-RESISTING STEEL BARS AND SHAPES
ASTM A320-97	ALLOYS-STEEL BOLTING MATERIALS FOR LOW-TEMPERATURE SERVICE
ASTM A582-95b	FREE-MACHINING STAINLESS AND HEAT RESISTING STEEL BARS, HOT-ROLLED OR COLD FINISHED

ASTM B21-96	NAVAL BRASS ROD, BAR, AND SHAPES
ASTM B98-97	COPPER-SILICON ALLOY ROD, BAR, AND SHAPES
ASTM B584-96	COPPER ALLOY SAND CASTINGS FOR GENERAL APPLICATIONS
D2000-98	STANDARD CLASSIFICATION SYSTEM FOR RUBBER PRODUCTS

1.4 Submittals

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Lay-out drawings and materials.; G ED

A complete list provided to the Contracting Officer for all work.

1.5 SHOP DRAWINGS

Prior to 60 days of start of construction of any gate structure, including all components and accessories, and prior to delivery of any materials to the site, the Contractor shall submit to the Contracting Officer complete layout drawings and materials lists for all work covered by this section. The layout drawings shall include assembly and shop details showing dimensions, weights, material specification, clearances, and connection and erection procedures, if applicable. The material list shall include catalog cuts and all other descriptive data as may be required to demonstrate compliance with the specifications. Complete shop drawings for the gate assembly shall be submitted as a package in order to assure proper coordination and functioning of equipment and structures. If departures from the drawings or specifications are deemed necessary by the Contractor, details of such departures, including the reasons therefor and changes in related portions of the project, shall be submitted with the shop drawings. Any approved departures shall be made at no additional cost to the Government.

PART 2 PRODUCTS

2.1 MATERIALS

a. Wall thimble, frame, disc and guides, stem guides, and floor stand shall be cast iron conforming to the requirements of ASTM A126, Class B, or ASTM A48, Class 30.

b. Wedges, thrust nuts, lift nuts, and stem couplings shall be bronze castings to the requirements of ASTM B584, CA 865 or stainless steel conforming to the requirements of ASTM A276, Type 304.

c Seat facings in frame and disc shall be bronze conforming to the

requirements of ASTM B21, CA 482. The bottom seal shall be attached to the disc and made of resilient material conforming to ASTM D2000.

d. Stem shall be an annealed stainless-steel bar conforming to the requirements of ASTM A582, Type 303 or ASTM A276, Type 304.

e. Fasteners shall be either copper-silicon rod conforming to the requirements of ASTM B98, CA 651, or CA 655, or stainless steel conforming to the requirements of ASTM A320, Grade B8 or Grade B8F for bolts and ASTM A194, Grade 8 or Grade 8F for nuts.

f. Adjusting screws and mounting bolts shall be bronze or corrosion-resisting steel as recommended by the manufacturer.

2.2 SLUICE GATE SCHEDULE:

2.2.1 Schedule

The Contractor shall furnish and install sluice gates to meet the conditions indicated on the drawings and as shown in the following schedule:

Drainage Structure	Station	Nominal Pipe Dia. (inches)	Design Head (feet)	Type of Install.	Wall Thimble Type & Length (inches)	Remarks
Kirby Park	Drainage Structure	48	31	pressure unseating flush bottom gate.	E-Section 8	2 required
Kirby Park	Landside Manhole	24	37	pressure unseating, flush bottom gate	n/a	Replace sluice gate, gate frame, stems, stem guides, operator, and all accessories
Beet Field	Drainage Structure	90w x 96h	30	pressure unseating flush bottom gate	n/a	2 required
Beet Field	Drainage Structure	102w x 96h	30	pressure unseating flush bottom gate	n/a	4 required

2.2.2 General

The new sluice gates shall be provided complete with crank-operated floor stands, stems, adjustable stem guides, frames, wall thimbles, anchor bolts,

and all necessary accessories.

2.2.3 Design Head:

The Design head for new sluice gates shall be in accordance with the schedule and drawings.

2.3 COMPONENTS:

2.3.1 Wall Thimbles

Wall thimble furnished for the gates shall be one-piece cast iron. The wall thimble shall be of the type and length specified in the schedule. The front flange shall be machined and shall have tapped holes, and it shall have metal-stamped vertical centerlines with the word "top" for correct alignment. A permanent gasket of uniform thickness shall be provided between the sluice gate and the wall thimble.

2.3.2 Frame

Frame shall be cast iron construction with extention and load bar to provide self-contained configuration. All contact surfaces of the frame shall be machined. The frame shall have machined dovetail grooves on the front face into which the bronze seat facings shall be driven and machined to a 63-microinch finish or better.

2.3.3 Disc

Disc shall be cast iron, one piece construction with integrally cast vertical and horizontal ribs. The disc shall have machined dovetail grooves on the seating face into which bronze seat facings shall be driven and machined to a 63-microinch finish or better. A tongue, machined on all sides, shall extend the full length of the disc on each side. Wedge pads for side wedges shall be cast integrally on the disc and machined to receive the adjustable bronze wedges. A heavily-reinforced nut pocket shall be cast integrally on the vertical centerline and above the horizontal centerline.

2.3.4 Guides

Guides shall be casts iron and such length as to retain and support at least one-half the disc in the full open position. The guides shall be machined on all contact surfaces and shall have a machined groove along their entire length for the tongue of the disc. Guides shall have machined pads for the side wedge seats. Guides may be integral with the frame or may be attached to the frame with corrosion-resisting steel studs and nuts and dowels to prevent any relative motion between the guides and frame.

2.3.5 Side Wedges

Side wedges shall be provided on the gate and shall be solid cast bronze. Wedges shall be machined on all contact surfaces and keyed to the cast-iron pads to prevent rotation or lateral motion. They shall be attached to the disc with bronze or stainless-steel studs and nuts shall have bronze or stainless-steel adjusting screws with lock nuts.

2.3.6 Seat Facings

Seat facings shall be extruded bronze and shall be of such shape as to fill

and permanently lock into the machined dovetail grooves. Attaching pins or screws will not be permitted. The installed seat facings shall be machined to a plane with a minimum 63-microinch finish.

2.3.7 Stem

The operating stem shall be corrosion-resisting steel and shall be of size to safely withstand the stresses induced by the operating forces. The stem shall be designed to transmit in compression at least two times the rated output of the floor stand with a 40 pound effort on the crank. Threads shall be machine cut, Acme type. A stem of more than one section shall be joined by bronze couplings threaded and keyed or bored and pinned to the stem. Adjustable bronze stop collar shall be provided on the stem above the floor stand lift nut.

2.3.7.1 Stem Guides

Stem Guides: Stem guides shall be split type cast iron, bronze brushed, and fully adjustable. Spacing shall be as required to adequately support the stem. L/R ratio of 200 is not to be exceeded. L/R is defined as the length of unsupported stem between guides or attachments divided by the radius of the stem.

2.3.7.2 Stem Cover

A stem cover shall be furnished for each gate operator that employs rising stem type assemblies. The cover shall be made of Schedule 80 steel pipe, hot-dipped galvanized after fabrication, and shall be of sufficient diameter and length to permit full stem travel without obstruction. The top of the cover shall be closed with a galvanized-steel pipe cap. The bottom end of the stem cover shall be mounted in a housing or adapter plate for easy field mounting. The stem cover is to have slots cut to indicate sluice gate fully open and sluice gate fully closed.

2.3.8 Floor Stand

A crank-operated floor stand shall be furnished for the gates. The capacity shall be as required so that the gate operates under the specified head with not more than a 40-pound effort on the crank. A bronze lift nut shall engage the operating stem. Gears shall be cast iron with machine-cut teeth. Tapered roller or ball bearings shall be provided above and below the operating nut to support both opening and closing thrusts. The pinion shafts shall be supported on tapered roller or ball and cover. All components shall be enclosed in cast-iron case and cover. Positive mechanical seals shall be provided to retain lubricant and to exclude moisture and dirt. Lubrication fittings shall be provided for the lubrication of all gears and bearings. The floor stand shall include a cast-iron pedestal designed to position the input shaft about 36 inches above the operating floor. The direction of rotation to open the gate shall be cast on or permanently attached to the floor stand. One crank for each operator shall be provided. The crank operated floor stand shall be provided with dual ratio (low and high) gearing. The gear ratio with the greatest mechanical advantage shall be sufficient to unseat the sluice gate with a maximum crank effort of 40-lb. The gear ratio with the least mechanical advantage shall fully raise and lower the sluice gate with a maximum crank effort of 40-lb. and the total number of crank low/high revolutions not to exceed one thousand (1000) for 60 inch of travel. The crank mechanism is to allow for easy transfer between high and low gear ratios by a shifting lever which shall be vandal proofed.

2.3.8.1 Shaft Extension

Floorstand shall be provided with a removable 12" long pinion shaft extension. Shaft extension shall be suitable for use with the manual crank handle and the portable operator.

2.3.9 Portable Operating Motors

2.3.9.1 General

Provide two (2) hydraulic type portable operating motors. The portable operating motors shall mount to the crank operated hoists and operate at a speed of approximately 120 revolutions per minute (rpm). The unit shall be self-contained with a gas engine, hydraulic pump, 12 ft. of hydraulic hose, oil reservoir, hydraulic motor, directional control valve, and portable frame construction

2.3.9.2 Torque Control

The portable operating motor shall be equipped with a governor, throttle control, limit switch, or other means to control the torque delivered by the hydraulic motor to the floor stand. The torque limit shall be set to prevent damage to gates.

2.3.9.3 Compatibility

The portable operating motors shall be compatible with all crank operated hoists (new and existing) throughout the project. Furnish and install adaptors that mount to the hoist crank shafts as required for compatibility.

2.3.10 Chain and Padlock:

A chain and padlock shall be provided for locking the handcrank to the pedestal to prevent the gate from being operated manually by unauthorized persons. Chain shall be stainless steel. Padlock shall be corrosion resistant, suitable for outdoor use. All padlocks shall be keyed alike.

2.4 PAINTING

The gate, frames, floor stand, and all other ferrous metal surfaces that are normally required to be painted in order to provide needed protection or acceptable appearance shall be painted as specified in SECTION: 09965 - PAINTING; HYDRAULIC STRUCTURES, and as specified by manufacturer.

2.5 MACHINED SURFACES

All machined ferrous surfaces, including drilled tapped holes, shall be coated with a protective grease for shipment.

PART 3 EXECUTION

3.1 GENERAL

The sluice gate equipment and appurtenances shall be installed in strict accordance with the manufacturer's printed instructions. Extreme care shall be used in the handling, storage, and installation of the equipment to prevent damage or distortion to the flap gates and to ensure proper performance.

3.2 QUALITY ASSURANCE

3.2.1 Shop Testing:

The new gate assemblies shall be assembled in vertical position in the shop and inspected for proper seating. The gate disc shall be fully opened and closed to ensure that it operates freely. The floor stand shall be shop operated to ensure proper assembly and operation. Written notice shall be furnished to the Contracting Officer not less than 10 working days prior to the commencement of shop tests.

3.2.2 Field Testing:

After installation and final adjustment, the gate assembly shall be field tested. The gate shall be opened to full position and then closed to ensure that the gate operates freely and seats properly. The portable operator shall be used for opening and closing the gate except for the last 6 inches of gate travel in each direction which shall be accomplished with the hand crank. Leakage rates shall not exceed 0.1 gpm (gallons per minute) per foot of gate perimeter. The Contractor shall be responsible for keeping the gate in proper operating condition until completion of the contract.

-- End of Section --

SECTION 11300
FLAP GATES

PART 1 GENERAL

1.1 SCOPE

The work covered by this section consists of furnishing all plant, labor, equipment and materials required to fabricate, install, and test the flap gates in accordance with the drawings and as specified herein. All components necessary to make the flap gates operational shall be furnished by the Contractor. The flap gates shall be a product of a manufacturer who has manufactured flap gates for at least five (5) years. The Government reserves the right to reject any and all makes of flap gates not of proven design and quality.

1.2 PROJECT/SITE CONDITIONS:

The Contractor shall thoroughly familiarize himself with all details of the work and working conditions to verify dimensions in the field, and shall notify the Contracting Officer of any discrepancies prior to performing any work. The Contractor shall be specifically responsible for the coordination and proper relationship of his work to the structure and work of all trades.

1.3 APPLICABLE PUBLICATIONS:

The following publications of the issues listed below, but referred to thereafter by basic designation only, form a part of this specification to the extent indicated by references thereto:

AMERICAN SOCIETY FOR TESTING AND MATERIALS STANDARDS (ASTM):

ASTM A126-95	GRAY IRON CASTINGS FOR VALVES, FLANGES, AND PIPE FITTINGS
ASTM A194-A97	CARBON AND ALLOY STEEL NUTS FOR BOLTS FOR HIGH-PRESSURE AND HIGH-TEMPERATURE SERVICE
ASTM A276-97	STAINLESS AND HEAT-RESISTING STEEL BARS AND SHAPES
ASTM A320-97	ALLOYS-STEEL BOLTING MATERIALS FOR LOW-TEMPERATURE SERVICE
ASTM A536-84	DUCTILE IRON CASTINGS
ASTM B21-96	NAVAL BRASS ROD, BAR, AND SHAPES
ASTM B98-97	COPPER-SILICON ALLOY ROD, BAR, AND SHAPES
B209-96	ALUMINUM AND ALUMINUM ALLOY SHEET AND PLATE
B211-95a	ALUMINUM AND ALUMINUM ALLOY BAR, ROD AND WIRE

ASTM B301-96	FREE-CUTTING COPPER ROD AND BAR
ASTM B584-96	COPPER ALLOY SAND CASTINGS FOR GENERAL APPLICATIONS
D2000-98	STANDARD CLASSIFICATION SYSTEM FOR RUBBER PRODUCTS

1.4 Submittals

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Necessary Materials; G ED

To demostrate the requirements of the specifications.

1.5 SHOP DRAWINGS

Prior to 60 days of start of construction of any gate structure, and prior to delivery of any flap gates to the site, the Contractor shall submit shop drawings, catalog cuts, or other material necessary to demonstrate that the proposed flap gates comply with the requirements of the specifications. Whenever catalog data is accompanied by nonapplicable data, the applicable portions shall be clearly designated. If departures from the drawings or specifications are deemed necessary by the Contractor, details of such departures and the reasons therefor shall be submitted with the shop drawings. Any approved departures shall be made at no additional cost to the Government.

PART 2 PRODUCT

2.1 FLAP GATES FOR OUTLET STRUCTURE INSTALLATION

a. Body, flap, and wall thimble shall be cast iron conforming to the requirements of ASTM A126, Class B or Class C.

b. Cover seat shall be neoprene conforming to the requirements of ASTM D2000. Body seat shall be bronze conforming to the requirements of ASTM B21, CA 482; ASTM B301, CA 145; or ASTM B584, Alloy 844.

c. Hinge-arm assemblies shall be stainless steel conforming to the requirements of ASTM A276, Type 304; copper alloy conforming to the requirements of ASTM B584, CA 865; or ductile iron conforming to the requirements of ASTM A536.

d. Hinge-pins shall be silicon bronze conforming to the requirements of ASTM B98, Alloy 655, or stainless steel conforming to the requirements of ASTM A276, Type 304.

e. Bushings at pivot points shall be permanently-lubricated bronze bushings.

f. Fasteners shall be silicon bronze conforming to ASTM B98, CA 651, CA 655, or CA 661 or stainless steel bolts conforming to ASTM A 320, Grades B8 or B8F and stainless steel nuts conforming to ASTM A194, Grades 8 or 8F.

g. Bolts, studs, anchor bolts, and nuts for fastening flap gates to thimbles or pipes shall be stainless steel conforming to the requirements of ASTM A276, Type 304.

2.2 FLAP GATE SCHEDULE:

The Contractor shall furnish and install flap gate assemblies in accordance with the contract drawings and the following schedule:

DRAINAGE STRUCTURE	STATION	NOMINAL PIPE DIAMETER (INCHES)	DESIGN HEAD (FEET)	WALL THIMBLE LENGTH (INCHES)	REMARKS
KIRBY PARK	DRAINAGE STRUCTURE	48	32	8	2 REQUIRED
KIRBY PARK	RIVERSIDE MANHOLE	24	37	---	REPLACE GATE AND GATE FRAME

PART 3 PRODUCT

3.1 FLAP GATES FOR OUTLET STRUCTURE INSTALLATION

3.1.1 Flap Gates

Flap gates shall be furnished to withstand design heads in the flap gate schedule. All flap gates shall be flange framed with bronze seats dovetailed into the gate body and resilient seats dovetailed and cemented into the cover. Flap gates shall meet requirements specified herein. Gate body shall feature a seat incline for positive closure.

3.1.2 Wall Thimbles

The wall thimble shall be an F-section, length as specified in the schedule, one-piece casting. Flanges shall be machined, drilled, and tapped for attaching the gate body. Hole and bolt sizes shall match the standard 125-pound ASME bolt circle unless otherwise directed or required. The vertical centerline shall be clearly marked, and the word "top" shall be embossed near the centerline. Watertight gaskets shall be provided by the manufacturer for installation between flap gate and wall thimble or flap gate and concrete wall face as applicable.

3.1.3 SEATS

Matching faces shall be parallel and machined seats shall have 63-microinch or better finish.

3.1.3.1 Neoprene Seats

Neoprene seats shall be impacted and cemented into dovetail grooves machined into the frame.

3.1.3.2 Bronze Seats

Bronze seats shall be impacted into dovetail grooves machined into the cover.

3.1.4 Hinge Arms

Hinge arms shall be of a double-pivot design. The upper pivot shall be adjustable for varying the flap gate sensitivity, and the lower pivot shall allow for a controlled amount of cover rotation to assure that cover seat and body seat lie in the same plane. Provision shall be made to prevent the cover from rotating sufficiently to become wedged in the open position. Pivot points shall have permanently-lubricated bushings as manufactured by "Lubrite", "Garlock" or approved equal.

3.2 PAINTING

PAINTING: All cast-iron parts shall be painted as specified in SECTION: 09965 -PAINTING; HYDRAULIC STRUCTURES and as specified by manufacturer.

3.3 MACHINED SURFACES:

Machined surfaces shall be coated with a water-resistant, rust-preventive compound prior to delivery to the site.

3.4 INSTALLATION:

Installation of all parts shall be performed by the Contractor in strict accordance with the manufacturer's printed instructions. Extreme care shall be used in the handling, storage, and installation of the flap gates to prevent damage or distortion to the flap gates and to ensure proper performance. Hole and bolt sizes shall be field verified for existing flap gates.

3.5 QUALITY ASSURANCE

Final adjustment and testing will be made to the satisfaction of the Contracting Officer. Each flap gate shall be opened and closed to ensure that the flap gate operates freely and seats properly. The Contractor shall be responsible for keeping the flap gates in proper operating condition until completion of the contract.

3.5.1 Shop Testing

The flap gates shall be assembled in the shop and inspected for proper seating. The flap gate shall be fully opened and closed to demonstrate that they operate freely. Written notice shall be issued to the Contracting Officer not less than 10 business days prior to the commencement of shop tests.

3.5.2 Field Testing

After installation and final adjustment, the gate assemblies shall be field tested. The gates shall be opened to full position and then closed to ensure that the gates operate freely and seat properly. The Contractor shall be responsible for keeping the gates in proper operating condition until completion of the contract.

-- End of Section --